EFFECTIVENESS OF BALLOON BLOWING ON RESPIRATORY PARAMETERS AMONG CHILDREN WITH LOWER RESPIRATORY TRACT INFECTION IN SELECTED HOSPITALS, KANYAKUMARI DISTRICT

DISSERTATION SUBMITTED TO
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IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE
DEGREE OF MASTER OF SCIENCE IN NURSING
CHILD HEALTH NURSING
APRIL 2015

CERTIFICATE

Certified that this is a bonafide work of **Ms. Sreedevi. R.K,** II year M.Sc (Nursing) student of St. Xavier's Catholic College of Nursing,Chunkankadai, submitted in partial fulfillment of the requirement for the Degree of Master of Science in Nursing to The Tamil Nadu Dr. M. G. R. Medical University, Chennai, under the Registration No. **301316954**

College Seal:

Signature of the Principal **: _____**

Dr. A. Reena Evency, MSc. (N) Ph.D., (N),
Principal,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, Kanyakumari District,
Pin code- 629 003.

CERTIFICATE

This is to certify that the dissertation entitled "**A Quasi Experimental Study to evaluate the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infection in selected hospitals, Kanyakumari district**" is a bonafide work done **Miss. R. K. Sreedevi, St. Xavier's Catholic College of Nursing** in partial fulfillment of the University rules and regulations for award of **M.Sc Nursing Degree Course** under my guidance and supervision during the academic year **2013-2015.**

Name and signature of the Guide: _____

Dr.A.Reena Evency, M.Sc (N) Ph.D.,(N),
Research guide, Childhealth Nursing,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, KanyakumariDistrict,
Pin code: 629003

Name and signature of the Head of Department:_____

Dr.A.Reena Evency, M.Sc (N) Ph.D.,(N),
Head of the department,ChildhealthNursing,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, KanyakumariDistrict,
Pin code: 629003

Name and signature of the Principal:_____

Dr.A.Reena Evency, M.Sc (N) Ph.D.,(N),
The Principal,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, KanyakumariDistrict,
Pin code: 629003**.**

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Approved by the Dissertation Committee on **27th December 2013**

Professor in Nursing Research : _____

Dr. A. Reena Evency, M. Sc., (N), Ph.D.,(N),
Principal, St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, Kanyakumari District,
Pin code: 629 003.

Clinical Speciality Guide : _____

Dr. A. Reena Evency, M. Sc., (N), Ph.D., (N),
Head of the Department, Child Health Nursing,
St. Xavier's Catholic College of Nursing,
Chunkankadai, Nagercoil, Kanyakumari District,
Pin code: 629 003.

Medical Expert : _____

Dr. Sashya Jayaharan, MD, DCH, PGDAP.,
Consultant Paediatrician
Dr.Jeyaharan Memorial Hospital,
Nagercoil**.**

_____ _____

Signature of the Internal examiner with date

Signature of the External examiner with date

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(R.K.SREEDEVI)

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ABSTRACT

A quasi experimental study was conducted to evaluate the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infection in selected hospitals, Kanyakumari District. Quasi-experimental, Non-equivalent pre-test post-test control group design was adopted and the study was conducted among children with lower respiratory tract infection between the age group of 3 and 8 years in Dr.Jeyaharan Memorial Hospital, Kanyakumari District. Convenience sampling was used to select 60 samples, 30 were selected as study group and 30 were selected as control group. Observational checklist was used to measure the respiratory parameters prepared by the researcher. Balloon blowing exercise was administered for the study group 10 times a day for 3 days.

The data gathered was analysed by descriptive and inferential statistical method and interpretations were made based on the objectives of the study. During the pre-test in the study population 21(70%) had mild respiratory distress and 9(30%) had moderate respiratory distress. In control group, 15(50%) had mild respiratory distress and 15(50%) had moderate respiratory distress. During the post test, in study group 29(96.6%) had no respiratory distress and 1(3.3%) had mild respiratory distress. In control group,3(10%) had no respiratory distress and 27(90%) had mild respiratory distress.

The estimated paired t value of respiratory distress among children (10.5*) which is significant at $p<0.005$.It shows balloon blowing exercise was effective in reducing respiratory distress. Hence the hypotheses (H1) are accepted.

The estimated unpaired t value were (7.65*) which is significant at $p<0.005$.It shows the significant difference in the post- test level of respiratory parameters among children in study group and control group. The study concluded that balloon blowing exercise was helpful to improve lung function.

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CHAPTER-I

INTRODUCTION

Healthy children brought up in healthy surroundings are not only source of joy to everyone, but also India's greatest resource tomorrow. Children are not little adults. They are in a dynamic process of growth and development, and are particularly vulnerable to acute and chronic effects of pollutants in their environment, which leads to diseases like respiratory tract infections, diarrhoea etc.

Respiratory system is a frequent site of illness in children. Respiratory infection and allergies together are responsible for many disruptions in family life and which force them miss their school work. Children respond differently to respiratory illness than adults. The respiratory changes that occur during childhood as new lung tissue continues to form and existing structure changes in shape and function .However, most respiratory conditions are more stressful for children than adult, more often leading to airway obstruction or respiratory failure. In respiratory tract, lower respiratory tract infection is one of the leading common diseases occur during childhood.

Acute infection of the lower respiratory tract may be diagnosed in children of all ages; they tend to occur most frequently in young children who have not yet developed resistance to infectious disease. The infections that occur during the childhood include bronchitis and pneumonia. The respiratory rate is a valuable clinical sign for diagnosing acute lower respiratory infection in children who cough and breath rapidly. The presence of lower chest wall in drawing identifies more severe diseases.

Pneumonia, inflammation of the pulmonary parenchyma, is common in childhood but occur more frequently in infancy and early childhood. Clinically, pneumonia may occur either as a primary disease or as a complication of another illness. In young children, the pathogenesis of bacterial pneumonia has been recognized due to upper respiratory tract colonization by organisms and aspiration of the contaminated excretions. Viruses account for 40 to 50 percent of

pneumonia hospitalizations for children in developing countries. Respiratory syncytical virus, parainfluenza viruses, adenoviruses and influenza type A virus are the most significant causes of viral pneumonia.

Lower respiratory tract infection is more fatal than upper respiratory infection. Moreover in 2013, 6.9% of occured due to respiratory illness which is the leading cause when compared to other diseases. Lower respiratory tract infection manifests symptoms like wheezing, fever, tachypnea and chest retraction.

Background of the study

Children are the world's most valuable resources; children represent the wealth of the country. They are truly the foundation of our nation. Hence the focus of every citizen should be to promote their health and safeguard them. Healthy children are the greatest resource and pride of any nation. But millions of children suffer from short and long-term illness that impacts their well-being and options in life, including fewer educational opportunities.

In 2013, 150 million new episodes of pneumonia were identified per year worldwide. More than 90% of which occured in developing countries. Nearly 30% of total annual deaths occur in children below 5 years. Viruses remain the most common cause of respiratory tract infection. Streptococcal pneumonia and Hemophilus influenza are the main causes of bacterial pneumonia in the world.

Indian Academy of Paediatrics (2013) approximately estimated that 150 million episodes of childhood pneumonia are reported every year from the world out of which 95% are from developing countries.15 countries account for nearly 75% and 6 countries including India account for 50%.India alone beats the brunt of 25% disease burden. Out of the 7.6 million under-5 childhood mortality world over16%, i.e. 12 million deaths are due to pneumonia. More than 90% of deaths, due to pneumonia occur in 68 poor nations, mostly in Africa and Asia.In India, the disease burden is huge.45million episodes are estimated annually with 6.6 million hospitalizations, which contribute to 24% national disease burden and 0.37 million deaths annually.

In 2012, about 100-150 million people around the world suffered from asthma. Worldwide deaths from this condition have reached over 18,000 annually. India has an estimated 15-20 million asthmatics .The prevalence rate is between 10% and 15% in 5to 11year old children. Approximately 80% of asthmatics report disease onset before 6 years of age.

World Health Organization recognized respiratory diseases as the second important cause of death in children below five years in 2010 .World Health Organization states that pneumonia is one of the three main causes for newborn infant deaths. Pneumonia was diagnosed in 156 million children in 2008 and led to 1.4 million deaths. Out of 156 million new cases of pneumonia more than 20 million patients with severe disease need hospital admission yearly. Pneumonia is the major cause of children's death in developing countries. In developed countries, the yearly incidence of pneumonia is estimated to be 33 per 10000 in children < 5 years and 14/5 per 10000 in children from 0 to 16 years old.

In worldwide, Lower respiratory tract infection among children place a considerable strain and serious on the health budget. In 2002 lower respiratory tract infection was still the leading cause of deaths among all infectious diseases, and they accounted for 3.9 million deaths worldwide. World Health Organization 2007 given, the incidence of clinical pneumonia in children aged less than 10 years in developing countries is close to 0.29 episodes per child per year. This equates to 151.8 million new cases every year, 13.1 million or 8.7% which are severe enough to require hospitalization. The overall crude asthma incidence in children is 8.2%.Latino/Hispanics had the highest crude asthma incidence of 14.0% when compared to 6% of African Americans, 6.7% for Caucasians and 6.8% for other race.

In United States, the most common chronic illnesses of asthma affect an estimated 10 to 12 percent of all children. The rising rate of asthma worldwide is because of environmental factors. In Canada, the rates of hospital admission for lower respiratory tract infection (LRTI) were notably higher at 116.1/1000 live births versus 63.2/1000 live births compared in the general United States.

In Southeast Asia, it was estimated that acute respiratory infection cause 4 million child deaths each year – 2.6 million in infants (0–1 years) and 1.4 million in children aged 1–4years.There are 450 million cases of pneumonia each year and that it causes 3.9 million deaths. In the sub-Saharan region of Africa, 1 022 000 die and 702 000 die in south Asia.In Australia, Asthma was more prevalent among children and young children aged 0-17 years (14%). Asthma is the most commonly reported long-term condition for children aged 0-14 years (13%). Boys (15%) were more likely to have asthma than girls (12%).

More than half of the world's annual new pneumonia cases are concentrated in just five countries where 44% of the world's children aged less than 5 years live: India (43 million), China (21 million) and Pakistan (10 million) and in Bangladesh, Indonesia and Nigeria (6 million each).

In India (2010), acute respiratory infection is also a serious problem accounting for 14.3 per cent deaths during infancy and 15.9 per cent deaths among children aged between 1-10 years. All India Institute of Medical Sciences says that, lung infection-pneumonia is curable; it kills 1.6 million children, including 1.4 lakh Indian kids, every year. In Simla (2010), there is limited data on asthma prevalence among school children aged 6-13 years. All over prevalence of asthma in the study was found to be 2.3 percent. Boys had a higher prevalence (3.1%) than girls (1.4%).

In Chennai, the incidence of respiratory illness has been increasing several folds in the past few years. Between March 2010 and March 2011, there was a two-fold increase in the number of children with pneumonia. In the last one year, 296 children were detected with pneumonia in one city hospital of Chennai and minimum three to five cases admitted every week in one hospital.

Hospital records from states with high infant mortality rate shows that upto 13% of inpatient deaths in paediatric wards are due to acute respiratory tract infection. On an average, children below 5 years of age suffer about five episodes of acute respiratory tract infection thus accounting for about 238 million attacks. Although most of the attacks are mild and self-limiting episodes, acute respiratory tract infection is responsible for about 30-50% visits to health facilities and for

about 20-40% admissions to hospital. The disability-adjusted life lost due to acute respiratory tract infection in Southeast Asia is about 33 million.

National asthma control programme was launched in 1999 to help millions of people with asthma to gain control over their disease. The programme goals include reducing the number of deaths, hospitalization and emergency department visit. National Asthma Control Programme funds that states, cities and school programmes to improve surveillance of asthma, train health professionals, educate individuals with asthma and explain asthma to public.

In India, acute respiratory disease control programme is the standard case management of acute respiratory infection (ARI) and prevention of deaths due to pneumonia is now an integral part of Reproductive and Child Health Programme. Peripheral health workers are being trained to recognize and treat pneumonia. Cotrimoxazole is being supplied to the health workers through the child survival and safe motherhood programme drug kit.

Pediatric nurses are in a position to identify the knowledge, attitude and practice of LRTI in children. This will enable the nurse to plan with specialized service to help children to understand breathing exercises that will make a significant difference in the reduction of respiratory signs and improvement in lung function.

Significance and Need for the study

Respiratory tract infection is responsible for death of 4.5 million children in the world each year, mainly from the developing countries. Respiratory infection occurs more frequently than any other illness.

Breathing exercise is very easy to learn, and is therefore specially helpful for children problems with breathing difficulty; on the other hand, absence of exercise aggravates symptoms and respiratory infection. Solution of this paradox - exercise that specifically develops muscles and blood vessels, applying stress on the lungs during breath in and by using increased air resistance strictly due to nasal fast breath in or "sniff". Clinical trials show that regular practicing of exercise reduce frequency of attack and can completely eliminate chronic

infection caused by asthma. It also benefits by strengthening breathing apparatus as well as through keeping the nose clean and developing strong habit of nasal breathing that reduces exposure to allergens.

Education of parents and children is an important aspect of lower respiratory tract infection treatment. Parents should also be asked to maintain a record of daily symptoms such as cough, wheezing, breathlessness and sleep disturbance.

Breathing exercises helps to strengthen the children's lungs and control their breathing. Various breathing exercises help to reduce the severity of respiratory signs and symptoms. Breathing techniques are helpful for reducing breathing difficulty. Breathing exercise as an integral part plays a significant role in airway clearance and parenchymal expansion by improving the efficiency of respiratory muscles. Modified breathing exercise is mandatory in children because they might not cooperate like adults. The principle is to attract children and not to create boredom. It can be accompanied by musical tone that would evince interest in child. Various modified forms of breathing exercises like group exercises, running, balloon blowing, abduction, adduction and forward movement of upper limbs, blowing air into the water with a straw, blowing a trumpet, flute and mouth organ playing are found effective in children.

Several educational programmes have been developed for children with lower respiratory tract infection, in order to promote changes in behaviour and to improve health and quality of life. Such programmes are commonly termed "self-care management" programmes. Self-management programme were intended to develop the concept of "partnership" between physician, health teams, child and family, and to teach children the skills necessary to manage lower respiratory tract infection such as asthma and other airway disease at home. As a result of participation in these programmes, children experienced a less number of physician visits, and an improvement in their physical and social activities.

Balloon blowing exercises involving, a group of muscles interacting to adapt thoracic dimensions to certain breathing stages. Basic respiratory muscles are the diaphragm, the internal intercostal and external intercostal. Accessory

muscles, or muscles that contribute to lift the ribcage, so that lungs can expand and take in air, are frequently used during vigorous physical activities, like weight training, stressful situations or when someone suffers from an asthma attack. Steadily blowing up several balloons, one after another, effectively exercises these muscles, builds lung capacity and stamina.

Children with Lower respiratory tract infection may be very anxious and may feel uncomfortable. They have increased chance of allergic reaction, and are not able to do normal activities. They require frequent hospitalization, which disrupts family life and school attendance. There are a number of acute and chronic infections that can affect the lower respiratory tract. In lower respiratory tract infection, Pneumonia is a dangerous type of lung infection with a mortality rate of around 25%and possible complications are emphysema or lung abscess.

Anitha,K., (2013). conducted a study to compare the effectiveness of steam inhalation versus twin technique on respiratory function among children with lower respiratory tract infection at Government Headquarters Hospitals, Erode. Sixty samples were selected. The design used for the study was quasiexperimental pre test and post test of two experimental groups were selected to evaluate the effectiveness of steam inhaltion versus twin technique on respiratory function. Modified respiratory assessment scale (Respair care clin scale, 1986) was used to assess the respiratory function. The paired‘t’ for experimental group I was 9.81 and experimental group II was 10.95 which is significant at $p<0.05$ level. The results revealed that steam inhalation as well as twin technique can be used in the treatment of lower respiratory tract infection

During clinical exposure, the researcher has seen children diagnosed and hospitalized frequently with lower respiratory tract infection and found to continuously cough, vomiting, not taking food properly, increased school absenteeism and they do not have interest in activities. Family members looked worried. So the researcher wanted to help the children and family by improving the health status of children. So the researcher intended to do a study on balloon blowing breathing exercises among children with lower respiratory tract infection.

Statement of the problem

A quasi experimental study to evaluate the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infection in selected hospitals, Kanyakumari district.

Objectives of the study

- To assess and compare the pre-test and the post-test level of respiratory parameters among children in study and control group.
- To evaluate the effectiveness of balloon blowing on respiratory parameters among children in study group.
- To associate the post-test level of respiratory parameters among children with lower respiratory tract infection with demographic variables and clinical variables in study and control group.

Hypotheses

H_1: There is a significant difference between the pre-test and post-test level of respiratory parameters among children with lower respiratory tract infection in study group and control group.

H_2: There is a significant association between the post-test level of balloon blowing on respiratory parameters with selected demographic variables and clinical variables between the study group and control group.

Assumptions

- Children with Lower respiratory tract infection may have ineffective breathing pattern.
- The breathing exercises will be effective on respiratory parameters of children with lower respiratory tract infection.
- Breathing exercises are easy to perform, cost effective and have beneficial effects on respiratory parameters.

Operational Definitions

Evaluate

Evaluation refers to the identification of difference between the pre-test and post-test level of respiratory parameters and judging the effectiveness of balloon blowing on respiratory parameters.

Effectiveness

In this study, it refers to the desired change that can be brought about by breathing exercise on respiratory parameters among children with lower respiratory tract infection as measured by an observational checklist.

Balloon blowing

A simple exercise that creates lung capacity by blowing up balloons each day. Blowing balloons works out the intercostal muscles responsible for spreading and elevating diaphragm and ribcage.

In this study, the child is encouraged to inflate a new ordinary balloon to a diameter of 7 inches at 10 times a day for 3 days.

Respiratory parameters

Respiratory parameters are set of tests that include respiratory rate, heartrate, temperature, oxygen saturation, chest retractions, breath sounds, cough, use of accessory muscles for respiration, nasal flaring and dyspnea that measure the strength of breathing muscles, which is quantifiable and measurable in nature.

Lower respiratory tract infection

Lower respiratory tract infection is inflammation and infection of the airway, lung, bronchi, bronchioles and alveolus characterized by asthma, pneumonia, bronchitis and bronchiolitis.

Delimitations

This study is delimited to,

- children with lower respiratory tract infection
- children with the age group of 3-8 years
- four weeks of data collection

Projected outcome

The study enables to identify the level of respiratory parameters among children with lower respiratory tract infection and provide an opportunity to teach balloon blowing exercise. At the end of the study, children can understand and develop practice of balloon blowing to improve lung function and the findings of the study help to evaluate the effectiveness of balloon blowing among children with lower respiratory tract infection.

Conceptual frame work

The conceptual frame work is based on modification made on "**Nola .J. Pender's Health Promotion Model (2002-Revised)**", consists of individual characteristics experiences, behaviour specific knowledge & affect and behaviour outcome.

Individual characteristics / experiences

I. Prior related behaviour

According to the theorist, prior related behaviour describes frequency of the similar behaviour in the past direct and indirect effects on the likelihood of engaging in health promoting behaviour.

In this study, the prior related behaviour includes the assessment of demographic variables, clinical variables and pre assessment of respiratory parameters by observational checklist.

II. Personal factors

According to the theorist, personal factors are categorized as biological, psychological and socio-cultural. These factors are predictive of a given behaviour and shaped by the nature of the target behaviour.

In this study, the personal factors include age, sex, education, residence, and religion, order of birth, income, occupation, and frequency of respiratory infection in the last year and previous habit of blowing a balloon.

III. Behaviour specific cognitions and affect

a) Perceived benefit of action

According to the theorist, perceived benefits of action are anticipated with positive outcomes that will occur from health behaviour.

In this study, the perceived benefits of action help the child to reduce the episodes of LRTI and to promote lung function.

b) Perceived barriers of action

According to the theorist, perceived barriers of actions are anticipated, imagined or real blocks and personal costs of understanding a given behaviour.

In this study, the perceived barriers of action is children may have lack of knowledge, lack of practice and lack of motivation regarding breathing exercises.

c)Perceived self efficacy

According to the theorist, perceived self efficacy is judgment of personal capability to organize and execute a health promoting behaviour. Perceived self-efficacy influences perceived barriers to action. So higher efficacy results in lowered perceptions of barriers to the performance of the behaviour.

In this study, the self efficacy is that child realizes the importance of breathing exercises to promote lung function and improve the knowledge and practice which will prevent the recurrent occurrence of lower respiratory tract infection.

c) Activity related affect

According to the theorist, activity related affect describes subjective positive or negative feelings occur before, during and following behaviour based on the stimulus properties of the behaviour itself. Activity related affect influences perceived self efficacy, which means the more positive the subjective feeling, the greater the feeling of efficacy. In turn, increased feeling of efficacy can generate further positive affect.

In this study, activity related affect is reduction of respiratory distress and episodes of children with lower respiratory tract infection.

d) Interpersonal influences

According to this theorist, Interpersonal influences cognition concerns behaviours, beliefs, or attitudes of the others. Interpersonal influences include: norms (expectations of significant others), social support (Instrumental & emotional encouragement) and modeling (vicarious learning through observing others engaged in a particular behaviour). Primary sources of interpersonal influences are families, peers and health care providers.

In this study interpersonal influence is that Intervention for reduction of respiratory distress by Balloon Blowing Breathing Exercises. The exercise is done 10times in the morning, afternoon and evening one hour before and one hour after feeding for 3 consecutive days.

f) Situational influences

According to this theorist situational influences are personal perceptions and cognitions of any given situation or context that can facilitate or impede behaviour include perceptions of options available, demand characteristics and aesthetic features of the environment in which given health promoting is proposed to take place. Situational influences may have direct or indirect influences on health behaviour.

In this study, situational influence is that the child need to modify the life style, breathing exercises and maintain health status which influence lung function and prevent recurrent occurrence of the respiratory distress.

IV.Behavioural outcome

a) Immediate competing demands and preferences

According to the theory, competing demands are those alternative behaviours over which individuals have low control, because there are environmental contingencies such as work or family care responsibilities. Competing preferences are alternative behaviour over which individual exert relatively high control, such as choice of ice cream or apple for a snack.

In this study, balloon blowing breathing exercises may influence the children to gain knowledge on exercises and practice them in reducing the occurrence of respiratory infection and improve lung function among child with lower respiratory tract infection.

b) Commitment to plan of action

According to the theorist commitment of plan of action is the concept of intention and identification of a planned strategy leads of implementation of health behaviour.

In this study, commitment of plan of action is the child with lower respiratory tract infection develops positive attitude and makes decision to continue the practice of breathing exercises to healthy life style and maintain health status which improve lung function and prevent recurrent occurrence of the respiratory infection in future.

c) Health promoting behavior

According to the theorist, health promoting behaviour is an end point or action outcome directed towards attaining the health outcome such as optimal well- being, personal fulfillment and productive living.

In this study, health promoting behaviour of children with lower respiratory tract infection may practice breathing exercises to maintain health

status which improve lung function and prevent recurrent occurrence of the respiratory signs.

Post test assessment

In this study, Post-test assessment of respiratory distress by observational method was done in study group and control group. The respiratory distresses were graded as normal, mild, moderate and severe.

Behaviour modification was seen among children .They are motivated to practice balloon blowing regularly and maintain normal respiratory function.

CHAPTER –II

REVIEW OF LITERATURE

The Review of Literature is defined as 'a broad, comprehensive in depth, systemic and critical review of scholarly publications, unpublished scholarly print materials, audio- visual materials and personal communications'.

Review of Literature of the present study was arranged in the following headings:

Section A: Studies related to lower respiratory tract infection among children

Section B: Studies related to respiratory parameters

Section C: Studies related to breathing exercise among children with lower respiratory tract infection

Section D: Studies related to balloon blowing exercise

SectionA: Studies related to lower respiratory tract infection among children

Sindhu Thomas., (2013) conducted a descriptive study to assess the effect of planned teaching programme on knowledge and practices in relation to prevention and management of respiratory tract infection among children in a selected urban community in Mumbai.50 mothers from Ramabhai AmbedkharNagar, CBD Nagar were selected.Quasi experimental with one group pretest post test design was used. Convenience sampling technique was used. Tool used for this study was structured interview schedule consisting of 3 sub parts. The calculated value was't'=29.34 which is significant at $p<0.01$ level. The study concluded that there was change in the practices after the planned teaching programmes in relation to prevention and management of respiratory tract infection.

Jennifer., (**2012**) conducted a cross-sectional descriptive study to estimate the prevalence of the early initiation of and exclusive breast feeding in the Rural Health Training Centre of a Medical College in TamilNadu, South

India .79 infants and children who attended the under- five clinic in the Rural Health Training Centre (RHTC), Pulipakkam Village, were chosen for the study by convenient sampling. This study was conducted by interviewing 79 mothers of the children in the ages of 0-24 months, who attended the under- five clinic of RHTC, Pulipakkam. The data was collected by using a pre tested, structured questionnaire to obtain the information on the breast feeding and the hygienic feeding practices among mothers. A p value of <0.05 was considered as statistically significant. The study concluded that the prevalence of the early initiation of breast feeding was 97.5% and the prevalence of exclusive breast feeding in the study was 68%. Inadequate exclusive breast feeding and the lack of hygienic feeding practices among the mothers were significantly associated with an increased incidence of upper and lower respiratory tract infection and gastro -intestinal infection in the infants and the children.

Padmavathy, R., (2012) conducted a study on acute lower respiratory tract infection due to indoor air pollution in Thirucihrapalli district, TamilNadu. 1173 children from 900 households of 26 villages of Tiruchirappalli district, TamilNadu, India were recruited for this study. Two week recall of acute lower respiratory tract infection (as per WHO guidelines) was collected to avoid recall bias from primary care giver every month for a period of one year. The study concluded that the risk of acute lower respiratory tract infection was higher in children living in solid fuel using households and had significantly higher PM 2.5 concentrations. Children under five years of age are probably the group at greatest risk from the effects of cooking smoke from solid fuel since they spend much of their time indoors and have less developed respiratory system.

Dhanjeyasharma.,(2011) conducted a study on prevalence of acute respiratory infection and their determinants in fewer than five children in urban and rural areas of Kancheepuram district. The study population consisted of 500 under five children. Data collection was done using a pre-tested, semi- structured questionnaire, designed for the study purpose. The P value is ($P < 0.05$) is considered as statistically significant. The study had identified low socioeconomic status, poor housing conditions, cooking fuel used, birth weight,

and nutritional status as important determinants for acute respiratory tract infection.

Metilda & bijapur., (2010) conducted a descriptive study to assess the effectiveness of planned teaching program on knowledge of prevention of pneumonia among mothers of children having acute respiratory tract infection admitted at selected hospitals, Manglore.60 samples were selected. One group pre test post test design was used. The calculated value is 43.47 which is significant at $p<0.001$ level. The study concluded that planned teaching program was effective in improving the knowledge of prevention of pneumonia among mothers.

Pereira, L.M.,(2010) conducted a study on Health burden of co-morbid asthma and allergic rhinitis in children attending asthma clinics in selected public sector health clinics, Trinidad. Children (393) were between 2-17 years that included 239 (60.8%) boys and 154 (39.2%) girls. Purposive sampling technique was used. The study concluded that more children with allergic rhinitis (>60%) suffer day and night symptoms ($p<0.001$), and miss school (59.8%) ($p<0.03$) at least once a week ($p<0.002$) than asthmatics.

Ranabir.,(2009) conducted a study to assess the prevalence rate of bronchial asthma among Indian children. The statistical analysis was done by mean and median.15 epidemiological studies are identified on the development of asthma in Indian children from 300 relevant articles. The overall weighed prevalence was found to be 2.74. The study concluded that childhood asthma among children 13-14 years of age was lower than the younger children (6-7 years of age).

Carroll, C.L., (2007) conducted quasi experimental study on complications in children with status asthmaticus in Hartford.500 samples were selected, a retrospective review of the complication profile and hospital course of all children admitted to a PICU with status asthmatics over a 9 years period was done Data were analyzed by using descriptive and inferential statistics. The study concluded that intubated children experiencing a complication had significantly

longer duration of mechanical ventilation, ICU length of stay and hospital charges than nonintubated children not experiencing a complication.

Yang,B.H., (2005) conducted a study on Effects of nursing instruction on asthma knowledge and quality of life in schoolchildren with asthma in Taiwan. The key instruments were the Asthmatic Knowledge Questionnaire and the Childhood Asthma Questionnaire-form .Pre-test and Post-test design was used. Data are analyzed by using descriptive and inferential statistics. Asthmatic knowledge increased among children who received instruction from nurses. These children also experienced significant improvements in their active quality of life ($p>0.5$), and decreased asthma severity ($p>0.05$). This study concluded that nursing instruction was helpful in improving asthma knowledge.

Section B: Studies related to Respiratory Parameters

Hephzibah Beulah., (2014) conducted a study to assess the effectiveness of massage therapy on respiratory status among toddlers with lower respiratory tract infection in selected hospitals, Porur.A sample of 60 toddlers were conveniently assigned to study and control group. In study group routine care and massage therapy was performed for three days in morning and evening. Then post-test was conducted at the end of each day whereas control group received routine care. The result concluded that massage therapy was significantly effective in improving lung functions. The study revealed that there was an association found between respiratory status and mother's education, care taker of child among toddlers with lower respiratory tract infection in study group. In the post-test of the study group, there was no association as found between respiratory status with selected demographic and clinical variables.

Arul vimala., (2012) conducted a quasi experimental study to evaluate the effectiveness of strelinkova breathing exercises on respiratory signs and parameters among children with lower respiratory tract infection in Masonic Hospital, Coimbatore.Sixty children were selected between the age group of 6-15 years.Quasi experimental non equivalent control group pre-test post-test design was used. Severity and exacerbation grade scale was used to assess the respiratory signs, peak flow meter was used to measure the peak flow rate and

pulse oximeter used to measure the oxygen saturation. The data was collected and analyzed by descriptive and inferential statistics. The calculated value was't'=5.2which was significant at $p<0.05$ level. The study concluded that strelinkova breathing exercise improved respiratory parameters and reduces respiratory signs among children with lower respiratory tract infection.

Dasmen., (2010) conducted an interventional study of few-minute breathing exercise program as a treatment modality for asthma and to evaluate its efficacy in improving associated clinic-immunological symptoms in Kuwait. 200 samples were selected. Participants in experimental group performed 2-4 sessions of the prescribed exercise every day. The exercise was done for 3 to 6 months. Non-randomized study design was used. Clinical assessment includes physical exam, asthma control, quality of life questionnaires, pulmonary function tests, and lung inflammation test. The study results revealed that about 86% of the participants in experimental group had good quality of life and good lung function after the intervention.

Gary,C., (2009) conducted a study to assess the effectiveness of bronchodilator therapy an improvement of acute asthma in Switzerland. 135 children (1-15 years) were selected. Peak expiratory flow and Oxygen saturation level was measured before and 30 min after salbutamol inhalation. The study concluded that Thus, salbutamol usually improves hypoxia in severe asthma, but SaO_2 is not a reliable guide to response to initial bronchodilator therapy in the majority of children with asthma ($SaO_2 \geq 91$ %) as it usually increases little and does not reflect increase in PEF.

Maclure., (2007) conducted a study to know the prevalence of lower respiratory tract infection of children, by use of peak flow meter in Central America. 12,245 urban children were selected. The prevalence of reported asthma symptoms varied across PFM readings; the highest prevalence occurred in the setting of red zone readings, with intermediate prevalence in the setting of yellow zone readings, and lowest prevalence in the setting of green zone readings. The study concluded that there was no significant relationship between the symptoms with the hospital care.

Section C: Studies related to breathing exercise among children with lower respiratory tract infection

HepzibahBeulah,MotchRackini&VijayaSamundeeswari.,(2014) conducted a study to evaluate effectiveness of blow bottle exercise on respiratory status among children with lower respiratory tract infection in chennai.A quantitative research design was used.The sample consisted of 30 study group and 30 control group with lower respiratory tract infection. Blow bottle exercise was given thrice a day for 10 days for study group along with routine care. The result concluded that there was a significant difference in the heart rate, respiratory rate and oxygen saturation in the study group than the control group which was attributed to the use of respiratory exercise

Bianchi,M.,(2011) conducted a open trial study to evaluate the effects of a respiratory exercise program tailored for children with asthma in Brazil. Fourteen patients concluded the 16-week respiratory exercise program. The patients participated in 1-hour sessions that took place twice a week in the morning. Descriptive analysis was done. Considerable improvement in quality of life was also observed. The clinical evaluations and daily recorded symptoms diary also indicated significant improvements and fewer respiratory symptoms. The study concluded that respiratory exercise was improving respiratory function.

Sakshi1& Multani ,N.K. ,(2010) conducted a study to determine the comparison of breathing exercise training on lung volumes of asthmatic children in four schools and one pediatric clinic in Patiala. Forty children were selected. They were divided in two groups of twenty each. One group was given breathing exercise intervention and other group was given aerobic exercise intervention for 6 weeks. Before and after the intervention period, the child was investigated with spirometeric analysis to find out the changes in the lung volumes after the effect of exercises in each group. The study concluded that breathing exercise intervention was effective in improving the lung volumes in asthmatic children.

Pneumol,B.J., (2008) conducted randomized analytical study on inspiratoy muscle training and respiratory exercises in children with asthma in Portuguese. 50 children were selected The results were evaluated using analysis of variance, the chi-square test and Fisher's exact test, values of $p > 0.05$ being considered significant. The study concluded that significant improvement was seen among asthmatic children.

Michail,S., (2005) conducted a study to assess effectiveness of strelinkova breathing exercises among children in Russian hospitals. 70 children were participated in the study with middle degree and children with severe asthma. The exercises were provided for the children and observations were performed for 2 months. Results were evaluated by spirometry. Average pre test value of Forced Vital Capacity is 89%, Forced Expiratory Volume is 81% and Average post test value of FVC is 100%, FEV is 95%.The study revealed that there was reduction in number of attacks, reduction of cough and improved nasal breathing.

Section D: Studies related to balloon blowing

Kim, Jim-seop , Lee & Yeon-Seop., (2012) conducted a study to evaluate the effectiveness of balloon blowing exercise to increase children lung function. The result showed that balloon-blowing training group significantly improved as compared to those of the non-training group. The study concluded that the balloon-blowing exercise had positive effects on lung function.

Aploni Neetha, J., (2011) conducted an experimental study on effectiveness of incentive spirometry v/s balloon blowing exercise on selected pulmonary parameters of patients with chronic obstructive pulmonary disease (copd) in selected hospitals, Mangalore.30 samples were selected and purposive sampling technique was used. Demographic performa, clinical performa includes inspiratoy capacity, peak expiratory flow rate, and breath holding time were used. Data were analyzed by using descriptive and inferential statistics. The study concluded that pulmonary function was improved and breathlessness decreased.

Devandra Gupta,et.al. (2006) conducted a study to evaluate the efficacy on balloon inflation on venous cannulation pain on children in Lucknow.75 children are selected .Children were randomly divided into 3 groups. Group1 (control) group 2(pressed a ruber ball) group 3(balloon). A manual venous occlusion was applied on the forearm and venipuncture was performed with a 22-gauge venous cannula.Pain was self- reported by visual analog scale. The study concluded that there is a significant reduction of severity of venipuncture pain observed in balloon group than other 2 groups.

CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with the methodology adopted for the study. It includes research approach, research design, and setting, criteria for sample selection, sample and sampling technique, instrument, method of data collection and plan for data analysis and protection for ethical consideration.

Research approach

The study utilized quantitative research approach.

Research design

The research design selected for this study was quasi experimental, nonequivalent control group pre-test and post-test design.

Group	Pretest	Intervention	Posttest
Study group	O_1	X	O_2
Control group	O_1	-	O_2

The symbols used are

O_1- Pre-test to assess the level of respiratory parameters in study group and control group

X – The intervention (balloon blowing breathing exercise) in study group

O_2- Post-test to assess the level of respiratory parameters in study group and control group

Variables

Independent variable : balloon blowing exercise.

Dependent variable : respiratory parameters.

Socio- demographic variables : Age, gender, education,type of family, order of birth, religion, residence, income,occupation of father and occupation of mother.

Clinical variables : Frequency of respiratory tract infection and previous habits of balloon blowing.

Setting of the study

The study was conducted in Jeyaharan Hospital at nagercoil. Jeyaharan Hospital is situated at court road, Nagercoil. It is a 75-bedded Paediatric Hospital with four floors. The hospital has well equipped Paediatric Intensive Care Unit, monthly outpatient census around 3000 children and inpatient census around 300 children. 100 to190 children were admitted with lower respiratory tract infection per month. Among them 75 to 80 children belong to the age group 3-8years.

Population

Target population **:** Children with lower respiratory tract infection (LRTI).

Accessible population **:** The population included for this study was children with lower respiratory tract infection from Jeyaharan Hospital.

Sample

Sample consists of children who are diagnosed as lower respiratory tract infection, asthma, bronchitis and pneumonia within the age group of (3-8years) admitted to a paediatric ward.

Sample size

The sample size consists of 60 children those who had been diagnosed with lower respiratory tract infection. Among those, 30 participants were selected for study group and 30 for control group.

Sampling technique

The researcher conveniently selected the study participants those who fulfilled the inclusion criteria.

The researcher selected 30 children for study group within the duration of first 15 days and 30 children were selected for control group within the duration of next 15 days.

CRITERIA FOR SAMPLE SELECTION

Inclusion Criteria

- Children aged 3-8 years with lower respiratory tract infection who are admitted in the hospital for 5 days.
- Children who can understand and speak Tamil.
- Children who are able to do balloon blowing.
- Children who are willing to participate.

Exclusion Criteria

- Children who are critically ill.
- Children with any congenital defects of mouth and nose like cleft lip and cleft palate and saddle nose.

DESCRIPTION OF THE TOOL

Tool consists of three parts

Part-I

Sociodemographic variables: Age, gender, education, type of family, order of birth, religion, residence, income, occupation of father and occupation of mother.

Part -II

Clinical variables: Frequency of respiratory tract infection and previous habits of balloon blowing.

Part-III

The observational checklist to assess the respiratory parameters. It consists of 10 items including respiratory rate, heart rate, temperature, oxygen saturation, chest retractions, breath sounds, and use of accessory muscles, cough, nasal flaring and dyspnea. Based on the severity of respiratory parameters the scoring was described as follows. (maximum score was 4 and minimum score was 1)

30-40: no respiratory distress.

29-20: mild respiratory distress.

19-10: moderate respiratory distress.

<10: severe respiratory distress.

DESCRIPTION OF INTERVENTION

The child was encouraged to inflate a new ordinary balloon (normal size-11inches) to a diameter of 7 inches 10 times a day for 3 days and each time blowing for 30 minutes.

Steps:

Step I: Obtaining a balloon.

- Balloon selected for the children in an attractive colour.

Step II: Loosening the balloon by stretching it in all directions.

- It helps the children to blow the balloon easily and allow for equal air entry.

Step III: Grasping the end of the balloon.

- The researcher asked the children to hold the open end of the balloon.

Step IV: Taking a deep breath and seal lips around the opening of the balloon.

- ❖ The researcher asked the children to inhale deeply from the lungs and place the lips tightly around the end of the balloon.

Step V: Blowing air from lungs into the balloon.

- ❖ The researcher asked the child to exhale slowly inside the balloon.

Step VI: Watching as the balloon initially that resists and then gradually expands. Inflating the balloon about 7 inches.

- ❖ The researcher asked children to inhale and exhale repeatedly, watching the balloon initially resisting and gradually increasing.

Step VII: Sealing the balloon with thumb and index finger.

- ❖ The researcher asked the children to hold the balloon tightly with thumb and index finger

Step VIII: Releasing air from the balloon and repeating the steps.

- ❖ The researcher asked the children to practice again and again.

CONTENT VALIDITY

Experts including three M.Sc., nursing faculty with more than five years of experience and two Paediatricians, did the content validity of the tool. The experts were requested to give their opinions and suggestions for further modification of items to improve the clarity and content of the items. The final tool was prepared as per the suggestions and advice given by the experts.

RELIABILITY

The observational checklist was prepared by the researcher. It was administered to 20 participants before the main study. The tool was practicable and feasible.

Table 3.1: Reliability

Sl.NO	TOOL	METHOD	'r' VALUE
1	Observational checklist for respiratory parameters	Inter rater method	0.9

Pilot study

Pilot study is a small-scale version or trial done in preparation for a major study. Pilot study was conducted by getting initial permission from St. Xavier's Catholic College of Nursing.

The pilot study was conducted in Flemy Grace Hospital at Mukkadu, for a period of 7 days. The researcher has obtained permission from the institution and from the participants prior to the study. The purpose of the study was explained to the subjects. The participants who fulfilled the inclusion criteria were selected. The convenience sampling technique was used to select 3 samples for study group and 3 samples for control group. Demographic variables and pre-test were conducted on the first day for both study and control group. In study group, the intervention of balloon blowing breathing exercise was taught to the child and made them to do the exercises daily for 30 minutes in the morning, afternoon and evening for 3 consecutive days. In control group, the existing hospital routine was practiced. On 3rd day post-test was done to assess respiratory signs measured by observational checklist in both study and control group. Analysis of the data was done by using descriptive and inferential statistics. The tool was found feasible and practicable. No changes were made in the tool and the researcher proceeded with the main study.

DATA COLLECTION PROCEDURE

Step I: Obtaining Permission

- The researcher got formal permission from the Principal, Research and Ethical Committee of St. Xavier's Catholic College of Nursing and

formal approval from the hospital management and oral consent was obtained from the participants prior to the study.

- Data collection was done in Dr.Jeyaharan Hospital at Nagercoil, for a period of 5 weeks among children who have lower respiratory tract infection

Step II: Pre-test Assessment

- The participants who fulfilled the inclusion criteria were selected.
- The convenient sampling technique was used to select 30 children for study group and followed by 30 children for control group.
- The researcher explained the purpose of the study to the children and their caregivers .Everyday 3-4 children were selected based on the severity of respiratory parameters.
- Demographic variables, clinical variables and pre-test was assessed by observational checklist on the first day for both study and control group. Based on the severity of respiratory parameters scoring categorized the study participants as mild, moderate and severe. The researcher selected mild and moderate cases for study and control group.

Step III: Intervention

- In study group, the intervention of balloon blowing breathing exercise was taught to the child and made them to do the exercises daily for 30 minutes for 3consecutive days.
- The researcher asked the child to inhale deeply from the lungs and blow the balloon, initially for 20 seconds and gradually increase for 30 minutes.
- The child was observed by the researcher in every session.
- In control group, the existing hospital routine was practiced.

Step IV: Post-Test

- On the 3rd day the researcher done post-test to assess the respiratory parameters among children measured by observational checklist in both study and control group.

- ❖ On the day of discharge, the researcher educated about balloon blowing exercise to control group children and encouraged to practice regularly to improve lung function.
- ❖ The data were collected and analyzed by using descriptive and inferential statistics.

PLAN FOR DATA ANALYSIS

Descriptive Statistics

- ➢ Frequency and percentage distribution was used to analyze the demographic variables and clinical variables of children with lower respiratory tract infection.

- ➢ Mean and standard deviation was used to assess the pre-test and post-test score of respiratory parameters among children with lower respiratory tract infection.

Inferential Statistics

- ➢ Paired t-test was used to compare the pre and post-test level of respiratory parameters in the study group and control group.
- ➢ Unpaired `t' test was used to compare the post-test level of respiratory parameters in the study and control group .
- ➢ Chi-square test was used to find out the association of the post-test level of respiratory parameters in study and control group with their selected demographic variables and clinical variables.

Ethical consideration

The study was conducted after the approval of dissertation committee of St.Xavier's Catholic College of Nursing on 27-12-2013.Written permission was obtained from the administrator and medical superintendent of Jeyaharan Hospital Nagercoil. Oral consent was obtained from each selected participant. Assurance was given to the care giver regarding the confidentiality of the data. The participants were assured that there will not be any harm caused to them during the course of the study.

CHAPTER –IV

DATA ANALYSIS AND INTERPRETATION

Research data must be processed and analyzed in an orderly fashion so that patterns and relationship can be discerned and validated, and hypotheses can be tested. Quantative data analyzed through statistical analysis includes simple procedures as well as complex and sophisticated methods.

This chapter deals with the analysis and interpretation of the data collected from the children with lower respiratory tract infection and findings. The data collected from the subjects were tabulated, analyzed and presented in the tables and interpreted under the following sections based on the objectives and hypotheses of the study.

PRESENTATION OF DATA

This chapter is divided into three sections,

Section -A: Distribution of the children according to the demographic variables and clinical variables in study group and control group.

Section-B: Assessment of the level of respiratory parameters

I. Distribution of the children in study group and control group according to the level of respiratory parameters before intervention.
II. Distribution of the children in study group and control group according to the level of respiratory parameters after intervention.

Section-C: Testing hypotheses

I. Comparison of the pretest and post test level of respiratory parameters among children in study group and control group.
II. Comparison of the post test level of respiratory parameters among children in study group and control group.
III. Association of the post test level of respiratory parameters among children in study group and control group with selected demographic variables and clinical variables.

SECTION-A

DISTRIBUTION OF THE CHILDREN ACCORDING TO THE DEMOGRAPHIC VARIABLES AND CLINICAL VARIABLES IN STUDY GROUP AND CONTROL GROUP

Table 4.1: Frequency and percentage distribution of children according to demographic variables and clinical variables in study group and control group

(n=60)

S.NO	Demographic variables	Study group (n = 30)		Control group (n = 30)	
		f	%	f	%
1	**Age of the child**				
	a) 3-5years	19	63.3	17	56.6
	b) 6-8years	11	36.6	13	43.3
2	**Gender**				
	a) Male	15	50	10	33.3
	b) Female	15	50	20	66.6
3	**Education**				
	a) Elementary	19	63.3	17	56.6
	b) Primary	11	36.6	13	43.3
4	**Type of family**				
	a) Nuclear	13	43.3	13	43.3
	b) Joint	17	56.6	17	56.6
	c) Extended	0	0	0	0
	d) Separated	0	0	0	0
5	**Order of birth**				
	a) First	12	40	14	46.6
	b) Second	16	53.3	15	50
	c) Third	2	6.6	1	3.3
6	**Religion**				
	a) Hindu	15	50	11	36.6
	b) Christian	11	36.6	16	53.3
	c) Muslim	4	13.3	3	10
	d) Others	0	0	0	0
7	**Residence**				
	a) Rural	14	46.6	11	36.6
	b) Semi-urban	16	53.3	19	63.3
8	**Income**				
	a) <Rs.5000	0	0	0	0
	b) Rs.5001-10000	13	43.3	22	73.3
	c) >Rs.10000	17	56.6	8	26.6

9	**Occupation of father**				
	a) Unemployed	1	3.3	0	0
	b) Coolie	13	43.3	10	33.3
	c) Private employee	14	46.6	20	66.6
	d) Government employee	2	6.6	0	0
10	**Occupation of mother**				
	a) Unemployed	24	80	24	80
	b) Coolie	0	0	0	0
	c) Private employee	6	20	4	13.3
	d) Government employee	0	0	2	6.6
11	**Frequency of respiratory tract infection**				
	a) No	6	20	11	36.6
	b) 1-2times	18	60	12	40
	c) 3-4 times	6	20	7	23.3
	d) >4times	0	0	0	0
12	**Previous habit of balloon blowing**				
	a) Yes	3	10	2	6.6
	b) No	27	90	28	93.3

Table 4.1 represents the distribution of children, according to the demographic variables and clinical variables. Here, distribution of children according to age shows that in the study group 19(63.3%) of them belonged to the age between 3 and 5 years, 11(36.6%) belonged to the age between 6 and 8 years. In the control group, 17(56.6%) of them belonged to the age between 3and 5 years, 13(43.3%) belonged to the age between 6and 8 years.

Distribution of children according to gender shows that in the study group, 15(50%) were males and 15(50%) were females. In the control group, 10(33.3%) were males and 20(66.6%) were females.

Distribution of children according to their educational status in the study group were19 (63.3%) were studying at the elementary level and11 (36.6%) were studying at the primary level. In the control group, 17(36.66%) were studying at the elementary level and 13(43.33%) was studying at the primary level.

Dispersion of children according to their type of family in the study group were 13(43.3%) that belonged to nuclear family, 17(56.6%) belonged to joint family. In control group, 13(43.3%) belonged to nuclear family and 17(56.6%) belonged to the joint family.

Allocation of children according to their birth order of the child shows that in study group 12(40%) were the first child, 16(53.3%) were the second child and 2(6.6%) were the third child. In the control group, 14(46.6%) were the first child, 15(50%) were the second child and 1(3.3%) was the third child.

Scattering of children according to their religion shows that in the study group, 15(50%) belonged to Hindu, 11(36.6%) belonged to Christian and 4(13.3%) belonged to Muslim. In the control group, 11(36.6%) belonged to Hindu, 16(53.3%) belonged to Christian and 3(10%) belonged to Muslim.

Allocation of children according to their residence in the study group 14(46.6%) belonged to rural and 16(53.3%) belonged to semi -urban. In the control group, 11(36.6%) belonged to rural and 19(63.3%) belonged to semi-urban.

Dispersion of children according to their income in the study group shows that 13(43.3%) between Rs.5000 and10000 and 17(56.6%) greater than Rs.10000.In the control group, 22(73.3%) between Rs.5000 and 10000 and 8(26.6%) greater than Rs.10000.

Distribution of children according to their occupation of father in the study group 1(3.3%) was unemployed, 13(43.3%) were coolies, 14(46.6%) were private employees and 2(6.6%) were government employees. In the control group, 10(33.3%) were coolies and 20(66.6%) were private employees.

Dispersion of children according to their occupation of mother in the study group, 24(80%) were unemployed, and 4(20%) were private employees. In the control group 24(80%) were unemployed, 4(13.3%) were private employees and 2(6.6%) were government employees.

Dispersion of children according to their frequency of respiratory tract infection in the study group: 6 (20%) had no occurrence of respiratory infection, 18(60%) had between one to two times exposed to respiratory infection and 6(20%) had more than three times exposed to respiratory infection. In the control group, 11(36.6%) had no occurrence of respiratory infection, 12(40%) had between one to two times exposed to respiratory infection and 7(23.3%) had between three and four times exposed to respiratory infection.

Allocation of children according to their previous habit of balloon blowing in the study group: 3 (10%) had habits of balloon blowing, and27 (90%) had no habits of balloon blowing. In the control group, 2(6.6%) had habits of balloon blowing and 28(93.3%) had no habits of balloon blowing.

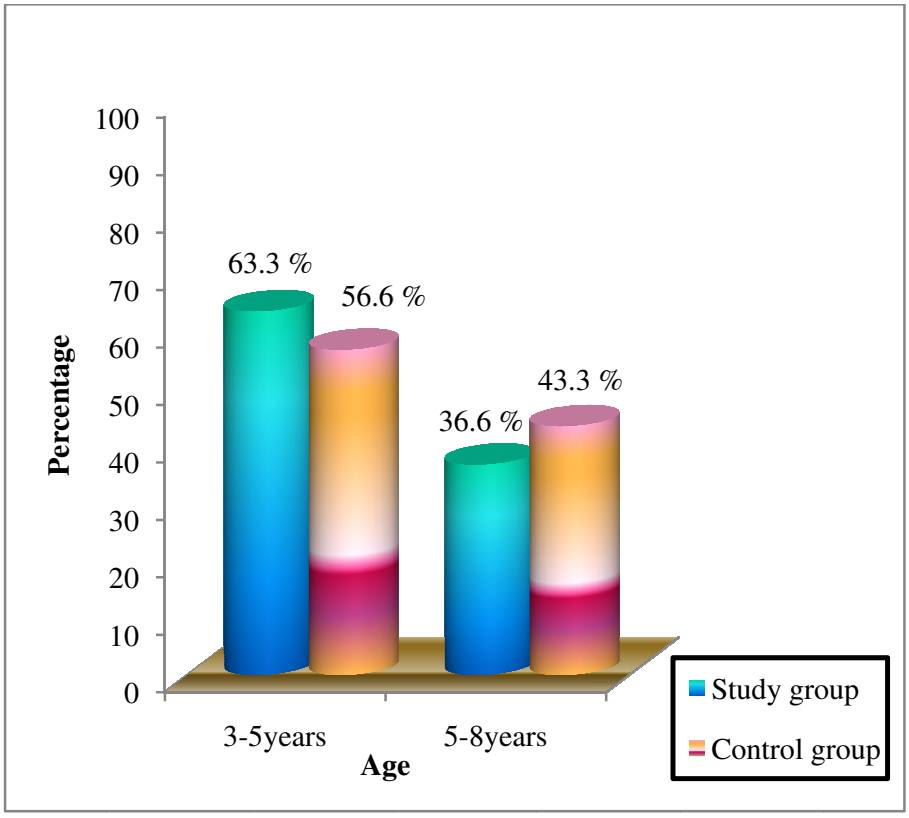

Fig -4.1: Percentage distribution of children according to age

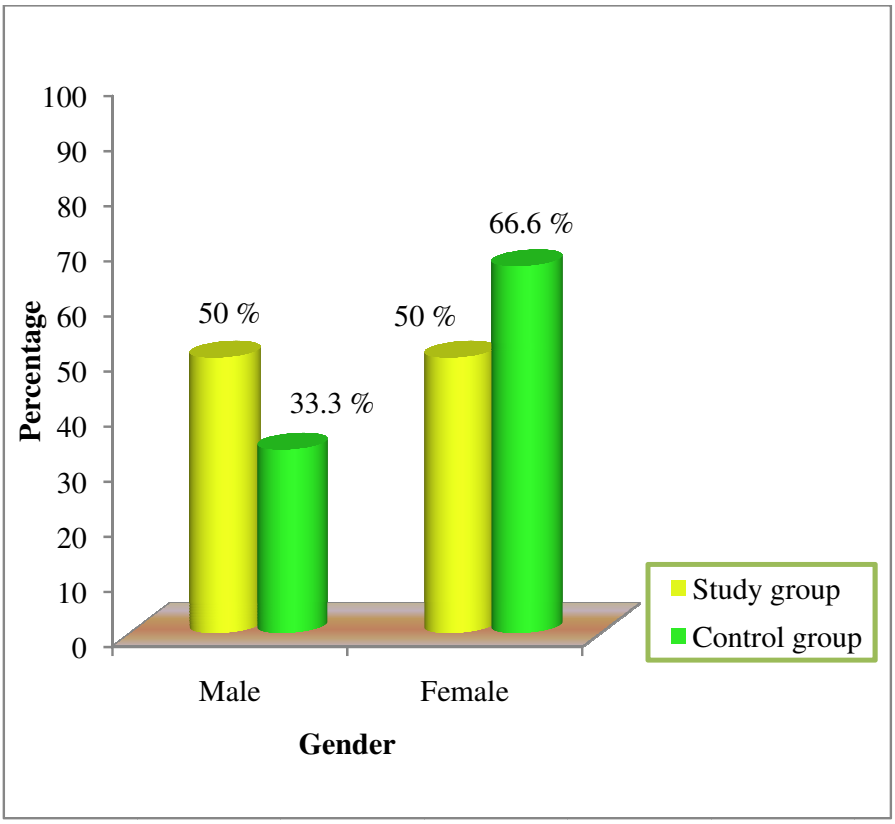

Fig -4.2: Percentage distribution of children according to gender

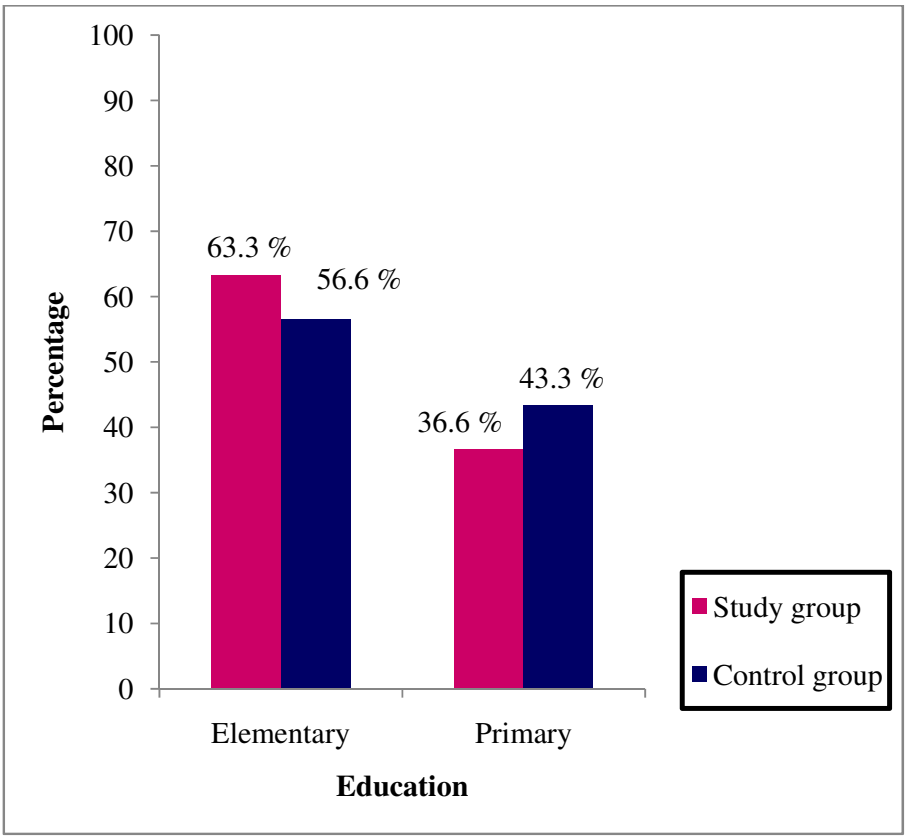

Fig -4.3: Percentage distribution of children according to education

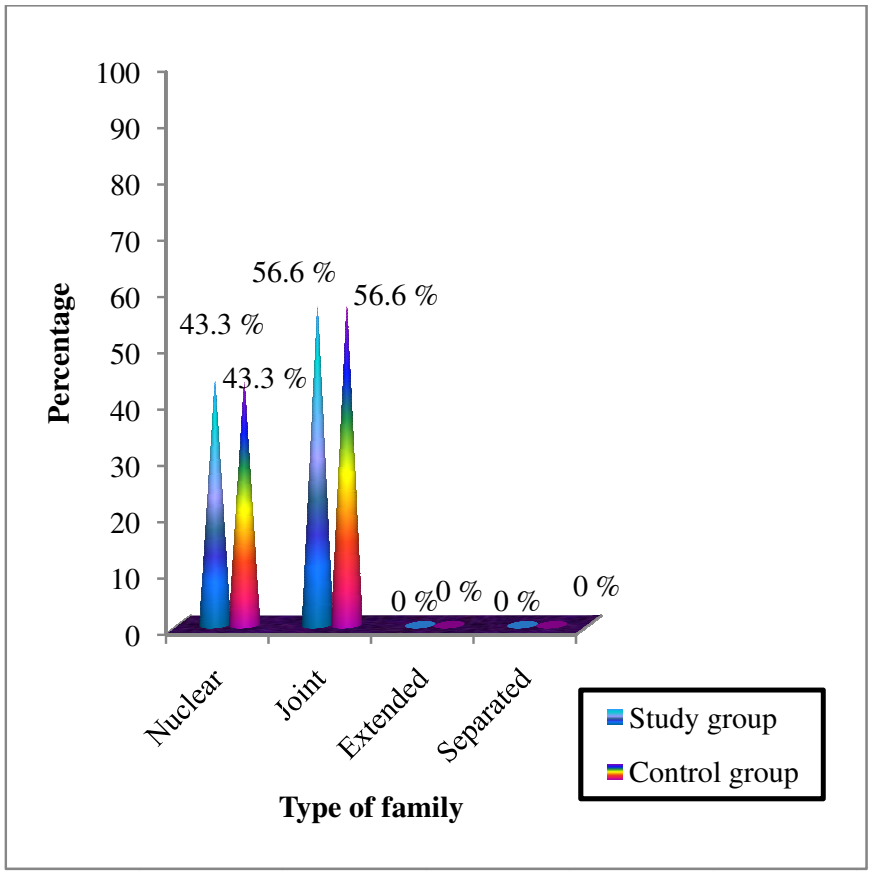

Fig-4.4: Percentage distribution of children according to type of family

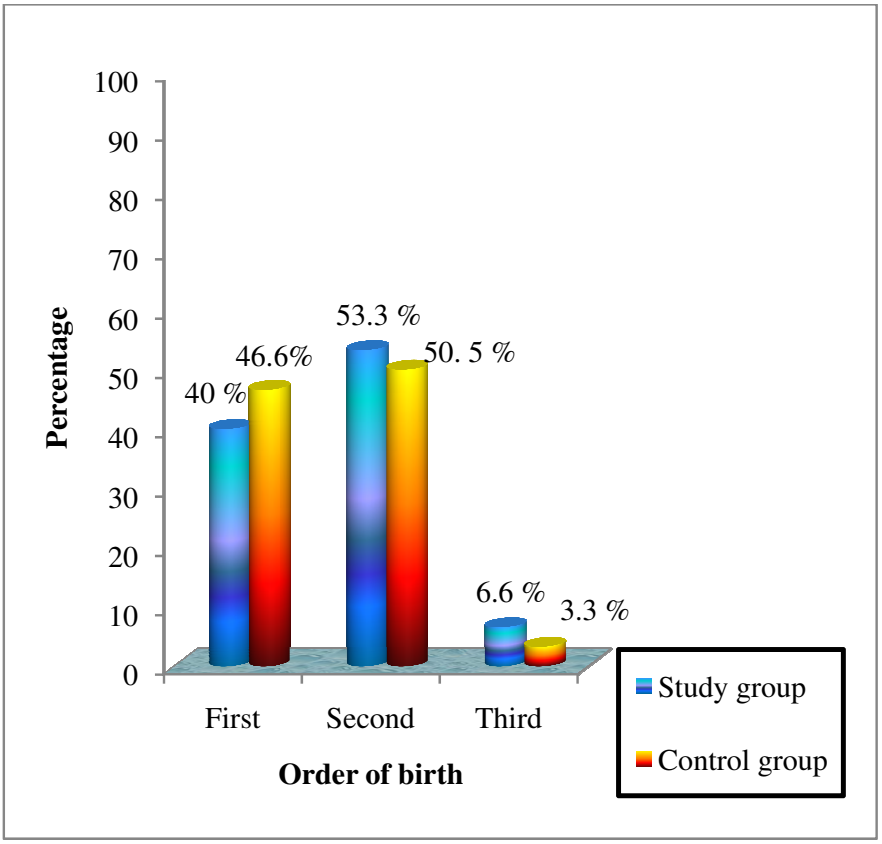

Fig-4.5: Percentage distribution of children according to order of birth

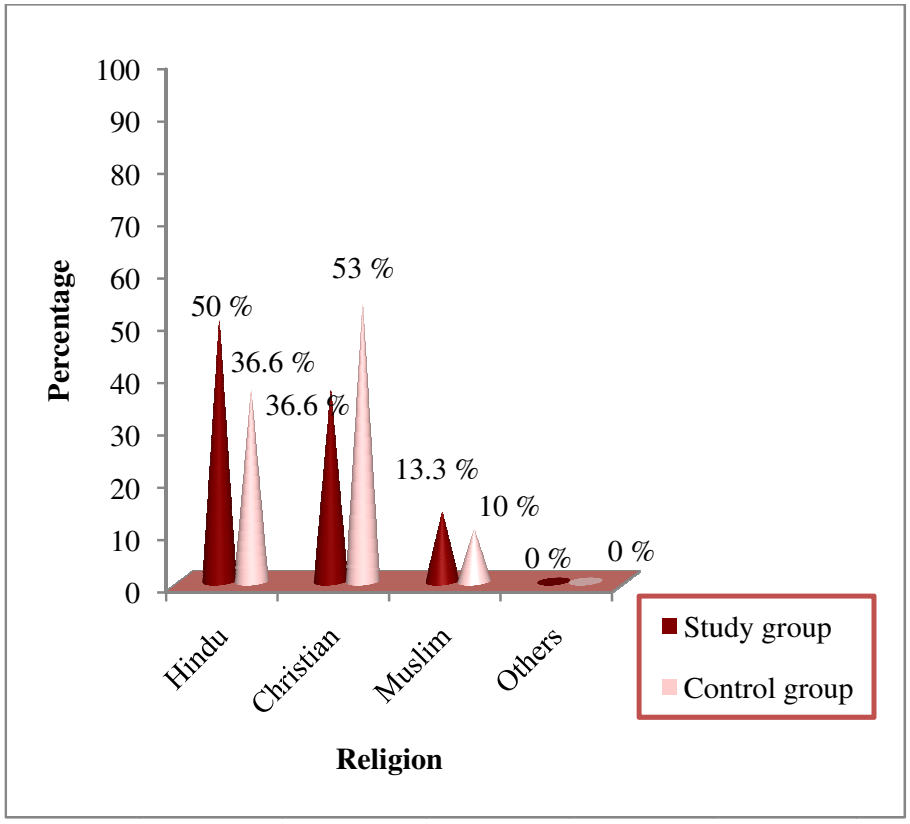

Fig-4.6: Percentage distribution of children according to religion

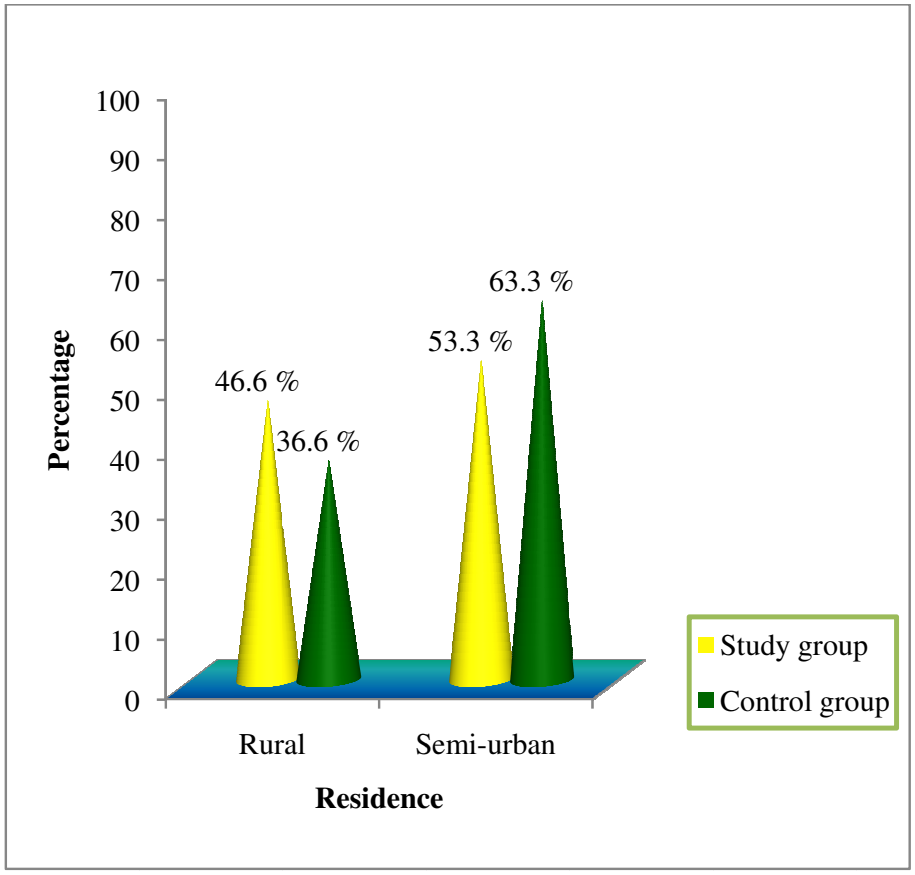

Fig -4.7: Percentage distribution of children according to residence

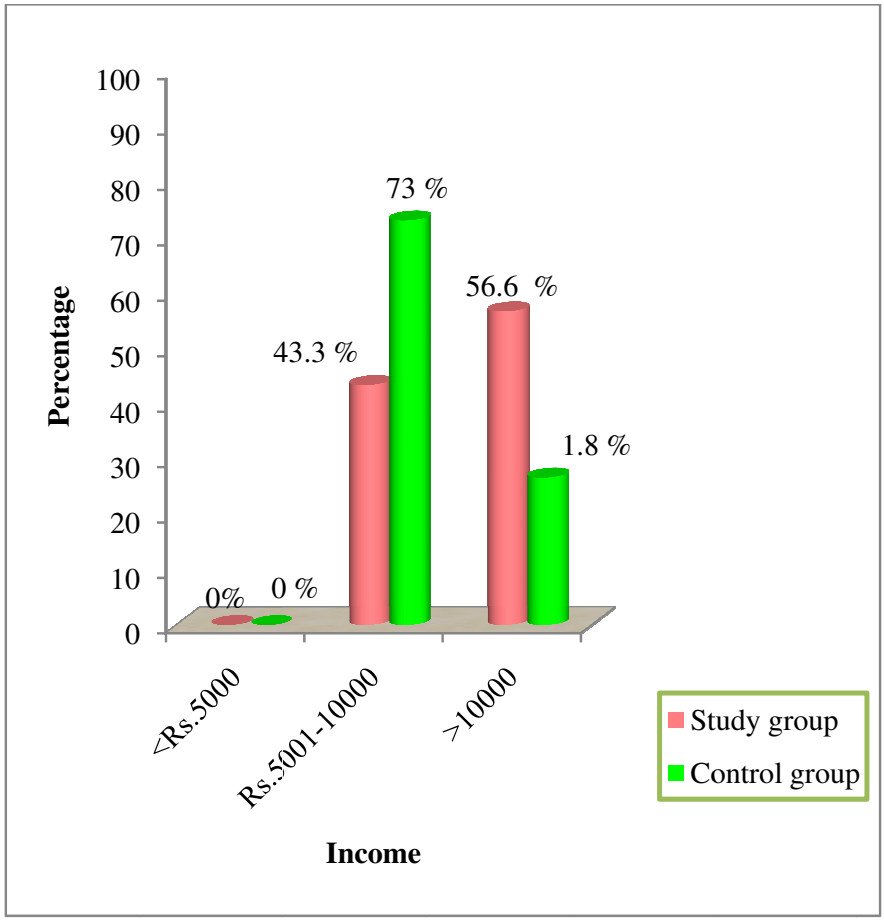

Fig -4.8: Percentage distribution of children according to income

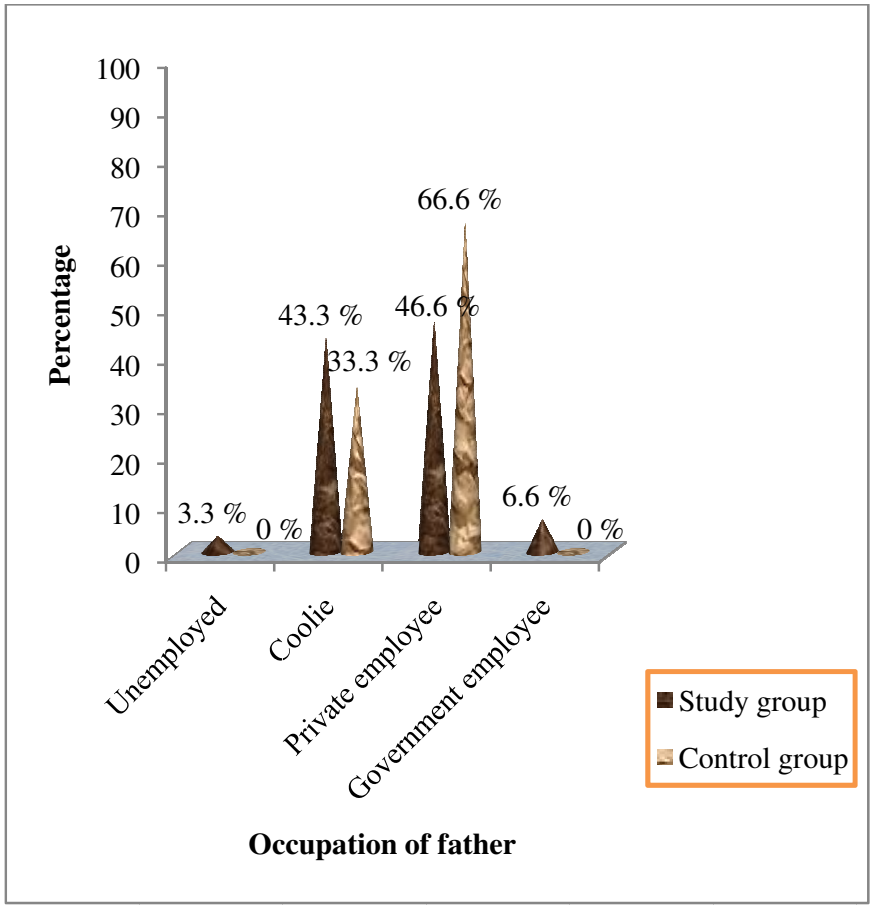

Fig -4.9: Percentage distribution of children according to occupation of father

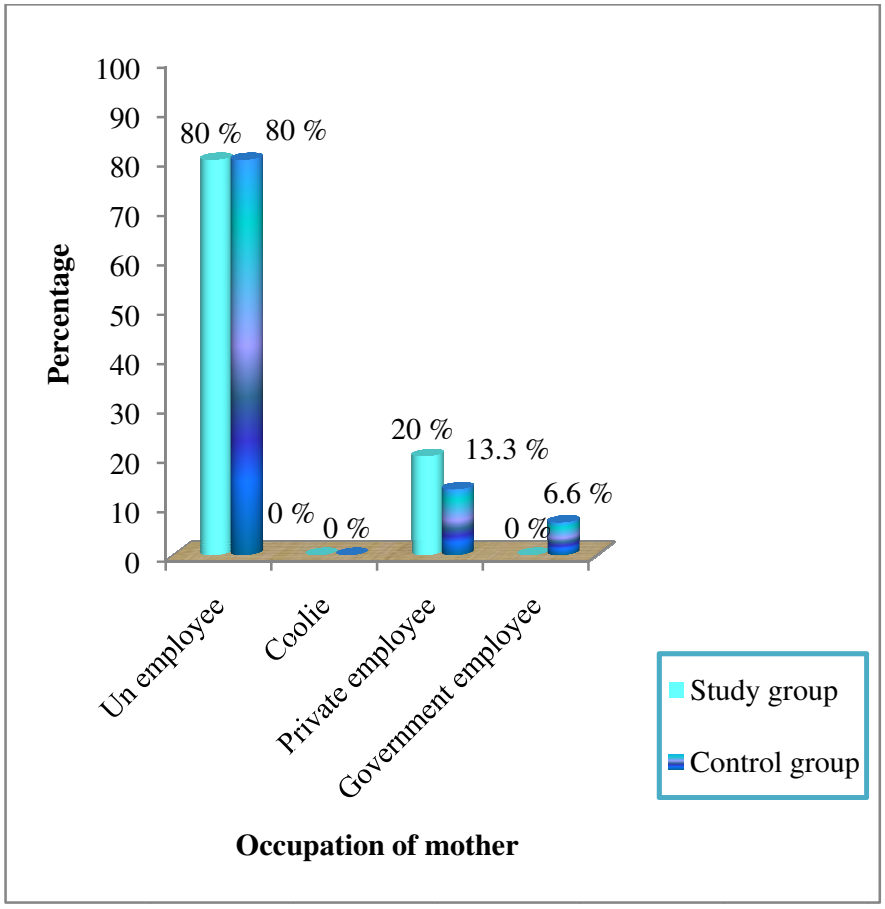

Fig -4.10: Percentage distribution of children according to occupation of mother

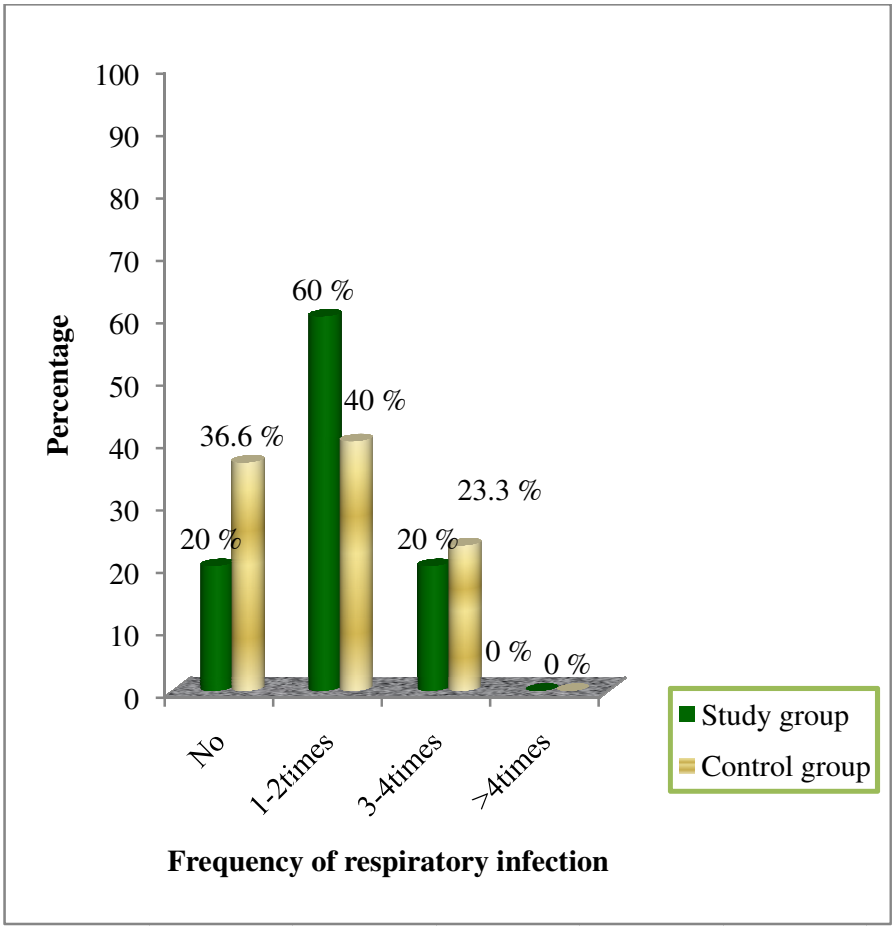

Fig -4.11: Percentage distribution of children according to frequency of respiratory infection

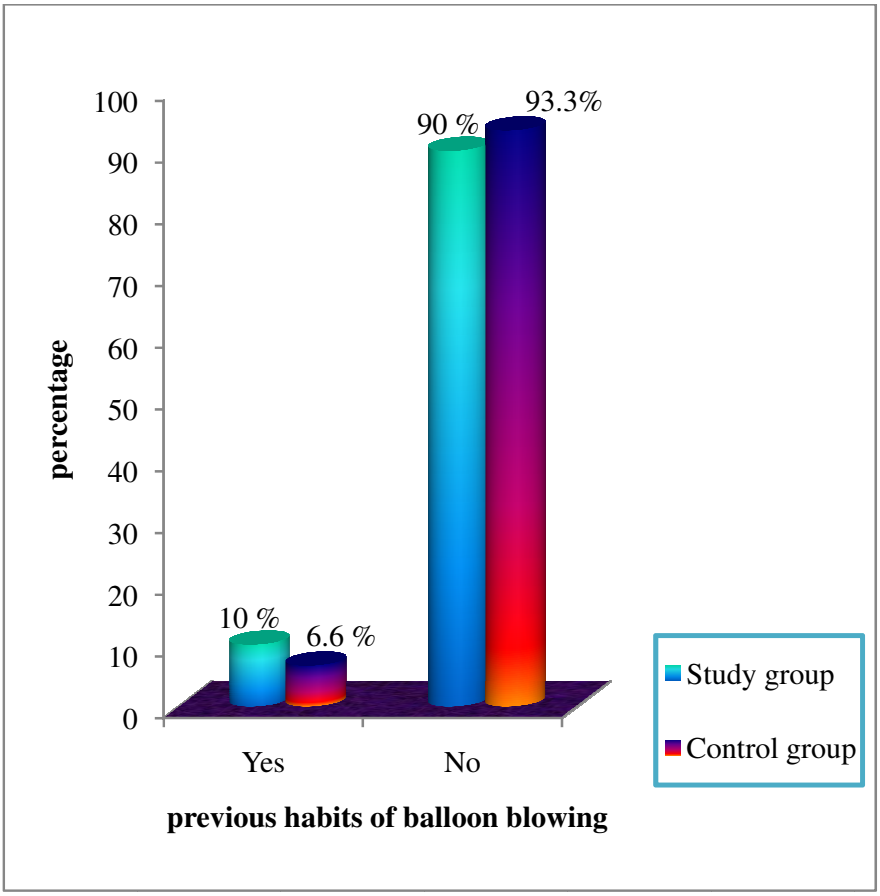

Fig 4.12: Percentage distribution of children according to previous habits of balloon blowing

SECTION-B

I.DISTRIBUTION OF CHILDREN IN THE STUDY GROUP AND CONTROL GROUP ACCORDING TO THE LEVEL OF RESPIRATORY DISTRESS BEFORE INTERVENTION

Table 4.2: Frequency and percentage of children according to their level of respiratory parameters in study group and control group before intervention

(n=60)

S.No	Level of respiratory distress	Study group (n=30)		Control group (n=30)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	No distress	0	0.00	0	0
2	Mild distress	21	70	15	50
3	Moderate distress	9	30	15	50
4	Severe distress	0	0.00	0	0

Table 4.2 represents before the intervention in study group, 21(70%) had mild respiratory distress, 9(30%) had moderate respiratory distress and none of them had no distress and severe distress. In control group, 15(50%) had mild respiratory distress, 15(50%) had moderate respiratory distress and none of them had no distress and severe distress.

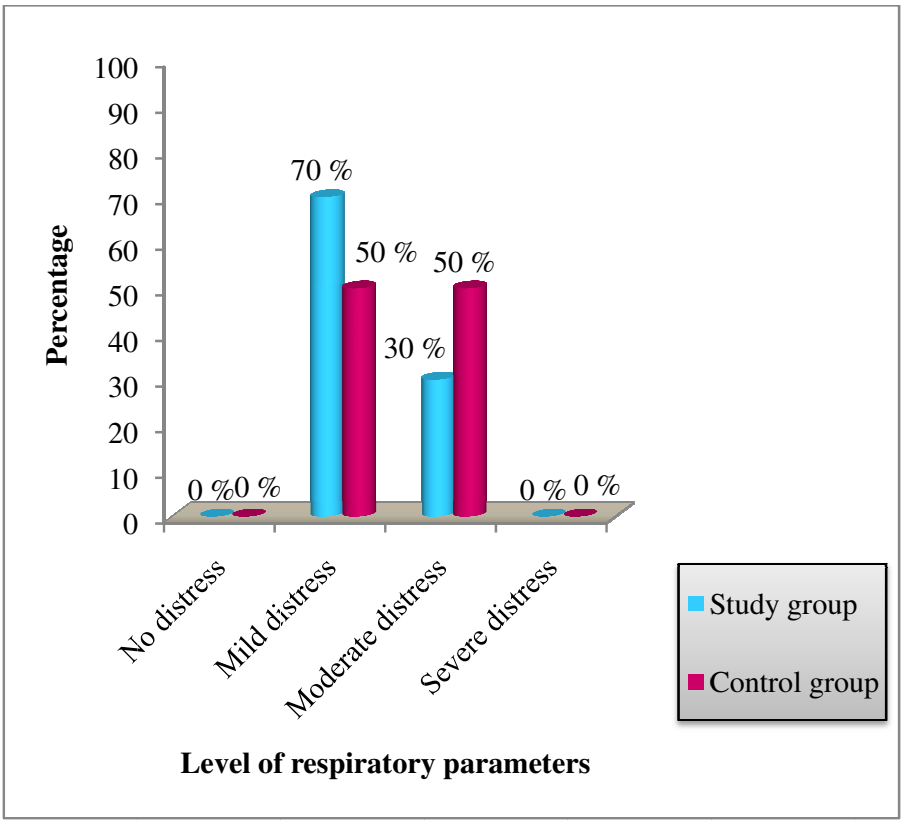

Fig -4.13: Percentage distribution of children according to level of respiratory distress before intervention

SECTION-B

II.DISTRIBUTION OF CHILDREN IN STUDY GROUP AND CONTROL GROUP ACCORDING TO THE LEVEL OF RESPIRATORY DISTRESS AFTER INTERVENTION

Table 4.3: Frequency and percentage of children according to their level of respiratory distress in study group and control group

(n=60)

S.No	Level of respiratory distress	Study group (n=30)		Control group (n=30)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	No distress	29	96.6	3	10
2	Mild distress	1	3.3	27	90
3	Moderate distress	0	0.00	0	0.00
4	Severe distress	0	0.00	0	0.00

Table 4.3 represents after the intervention in study group 29(96.6%) had no respiratory distress, 1(3.3%) had mild respiratory distress and none of them had moderate distress and severe distress. In control group, 3(10%) had no respiratory distress and 27(90%) had mild respiratory distress and none of them had moderate and severe distress.

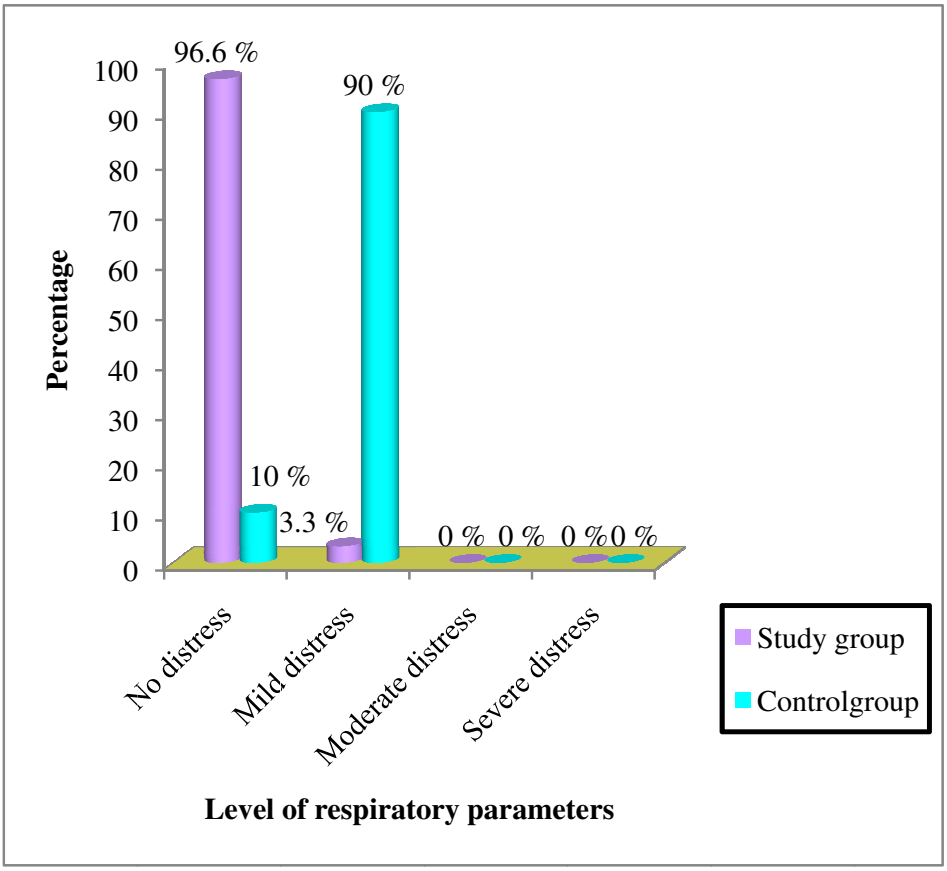

Fig 4.14: Percentage distribution of children according to level of respiratory distress after intervention

SECTION-C

TESTING HYPOTHESES

I .Comparison of the pre-test and post-test level of respiratory parameters among children in study group and control group

Table 4.4: Mean and standard deviation and paired‘t’ value on pre and post-test level of respiratory parameters among children in study and control group

(n=60)

S.no	Group	Mean	Standard deviation	Paired ‘t ‘ value
1	Study group (n=30) Pre test Post test	 29 31.5	 5.6 1.8	10.5*
2	Control group (n=30) Pre test Post test	 25.3 26.9	 5.0 1.70	1.47

Table value t =2.042,*significant at p<0.05 level

Table 4.4 represents the mean score on the level of respiratory parameters among children. In study group, the mean value was (29) in pre-test and (31.5) in post-test respectively. The paired t value was (10.5*) which is significant at p<0.05.It shows balloon blowing exercise was effective in reducing respiratory distress. Hence the hypothesis (H_1) was accepted.

In control group, the mean value on respiratory distress among children was (25.3) in pre-test and (26.9) in post-test respectively. The estimated paired‘t’ value was (1.47) which is non significant at p<0.05 level.

SECTION-C

II.COMPARISON OF THE POST-TEST LEVEL OF RESPIRATORY PARAMETERS IN STUDY GROUP AND CONTROL GROUP

Table 4.5: Mean, standard deviation and unpaired t value of the post-test level of respiratory parameters among children in study group and control group after intervention

(n=60)

S.no	Group	Mean	Standard deviation	Unpaired 't' value	Table value
1	Study group (n=30)	31.5	5.438	7.65*	2.0
2	Control group (n=30)	26.9			

Table value t =2.0, *significant at p<0.005 level

Table 4.5 represents the mean score on level of respiratory parameters among children in study group (31.5), in control group (26.9) respectively. The estimated unpaired 't' value was (7.65*), which is significant at p<0.05. It shows the significant difference in the post-test level of respiratory parameters among children in study group and control group.

SECTION -C

III.ASSOCIATION BETWEEN THE POST-TEST LEVEL OF RESPIRATORY PARAMETERS AMONG CHILDREN IN STUDY GROUP AND CONTROL GROUP WITH SELECTED DEMOGRAPHIC VARIABLES AND CLINICAL VARIABLES

Table 4.6: Association between the post-test level of respiratory parameters among children with selected demographic variables and clinical variables in study group and control group

(n=60)

S.no	Demographic variables	Study group (n = 30)			Control group (n =30)		
		Df	χ^2	Table Value	Df	χ^2	Table value
1	Age	3	2.9	7.8	3	6.1	7.8
2	Gender	3	1.3	7.8	3	3	7.8
3	Education	3	1.6	7.8	3	0.5	7.8
4	Type of family	9	0.9	16.9	9	0.1	16.9
5	Order of birth	6	0.9	12.5	6	0.4	12.5
6	Religion	9	2.3	16.9	9	2.6	16.9
7	Residence	3	1.1	7.8	3	0.6	7.8
8	Income	6	0.8	12.5	6	0.6	12.5
9	Occupation of father	9	1.2	16.9	9	1.6	16.9
10	Occupation of mother	9	4.1	16.9	9	2.6	16.9
11	Frequency of respiratory infection	9	4.1	16.9	9	1.2	16.9
12	Habits of balloon blowing	3	0.1	7.8	3	3.8	7.8

The table 4.6shows that in study group, for respiratory parameters on considering the age, chi-square value was 2.9 and the table value at degree of freedom three was 7.8. Considering the gender, chi-square value was 1.3 and the table value at degree of freedom three was 7.8.As per education, the chi-square was 1.6 and the table value at degree of freedom three was 7.8. Considering the type of family, chi-square value was 0.9 and the table value at degree of freedom nine was 16.9. As per the order of birth the chi-square was 0.9 and the table value at degree of six was 12.5. Considering the religion, chi-square value was 2.3and the table value at degree of freedom nine was 16.9. Considering the residence the chi-square was 1.1 and the table value at degree of freedom three was 7.8. As per the income the chi- square value was 0.804 at degree of freedom six was 12.5. As per occupation of father the chi-square value was 1.2at degree of freedom nine was 16.9 considering the occupation of mother, chi-square value was 4.1 and the table value at degree of freedom nine was 16.9. Considering the frequency of respiratory tract infection, chi- square value was 4.1and the table value at degree of freedom nine was 16.9.As per the habits of balloon blowing, the chi-square was 0.1and the table value at degree of freedom three was 7.8.

The table 4.6 shows that in control group, for respiratory parameters on considering the age, chi-square value was 6.1 and the table value at degree of freedom three was 7.8. Considering the gender, chi-square value was 3 and the table value at degree of freedom three was 7.8.As per education, the chi-square was 0.5 and the table value at degree of freedom three was 7.8. Considering the type of family, chi-square value was 0.1 and the table value at degree of freedom nine was 16.9. As per the order of birth the chi-square was 0.4 and the table value at degree of freedom six was 12.5. Considering the religion, chi-square value was 2.616 and the table value at degree of freedom nine was 16.9. Considering the residence the chi- square was 0.06 and the table value at degree of freedom three was 7.8. As per occupation of father the chi-square value was 1.6at degree of freedom nine was 16.9. As per occupation of mother the chi-square value was 2.6 at degree of freedom nine was 16.9. Considering the frequency of respiratory tract infection, chi-square value was 1.2 and the table value at degree of freedom nine was 16.9.As per the habits of balloon blowing, the chi square was 3.8and the table value at degree of freedom three was 7.8.

The table 4.6 reveals that there is no significant association ($p<0.05$) between the post test level of respiratory parameters among children in study group and control group with their selected socio demographic variables such as age, gender, education, type of family, order of birth, religion, residence, income, occupation of father, occupation of mother and selected clinical variables such as frequency of respiratory tract infection, habits of balloon blowing at $p<0.05$ level. Hence hypothesis (H_2) was not accepted.

This chapter deals with data analysis and interpretation in the form of statistical value based on the objective, paired 't' test was used to evaluate the effectiveness of balloon blowing on level of respiratory parameters in study group and unpaired 't'test was used to compare the pre-test and post-test level of respiratory parameters in study and control group. Chi-square test was used to find out the association between the level of respiratory parameters among children with their selected demographic variables and clinical variables in study and control group.

CHAPTER- V

DISCUSSION

This quasi experimental study was done to evaluate the effectiveness of balloon blowing on the level respiratory parameters among children with lower respiratory tract infection in Dr.Jeyaharan Memorial Hospital, Nagercoil at Kanyakumari District. The findings of the study have been discussed with the conceptual framework, and objectives.

Distribution of children according to demographic variables and clinical variables

The demographic profile in study group: 19(63.3%) of them belonged to the age between 3 and 5 years, 11(36.6%) belonged to the age between 6 and 8 years, 15(50%) were males and 15(50%) were females.19 (63.3%) were studying at the elementary level and11 (36.6%) were studying at the primary level. 13(43.3%) belonged to nuclear family and 17(56.6%) belonged to joint family.16(53.3%) were the second child and 2(6.6%) were the third child. 15(50%) were Hindus, and 4(13.3%) were Muslims, 14(46.6%) belonged to rural and 16(53.3%) belonged to semi-urban.13(43.3%) had between Rs.5000 to10000 and 17(56.6%) had greater than Rs.10000.1(3.3%)of their fathers were unemployees, 13(43.3%) of their fathers were coolies, 14(46.6%) of their were private employees and 2(6.6%) of their mother were government employees, 24(80%)of their mother were unemployees, and 4(20%) of their mother were private employees,6 (20%) had no occurrence of respiratory infection, 18(60%) had between one and two times exposed to respiratory infection and 6(20%) were more than three times exposed to respiratory infection.3 (10%) had habits of balloon blowing, and27 (90%) had no habits of balloon blowing.

In control group ,17(56.6%) of them belonged to the age between 3and 5 years and13(43.3%) belonged to the age between 6 and 8 years. 10(33.3%) were males and 20(66.6%) were females. 17(36.66%) were studying at the elementary level and 13(43.33%) were studying at the primary level,13(43.3%) belonged to nuclear family and 17(56.6%) belonged to the joint family. 14(46.6%) were the

first child,15(50%)were the second child and 1(3.3%) was the third child.11(36.6%) were Hindus, 16(53.3%) were Christians and 3(10%) were Muslims.11(36.6%) belonged to rural and 19(63.3%) belonged to semi-urban.22(73.3%) had between Rs.5000 and 10000 and 8(26.6%) had greater than Rs.10000.24(80%) of their fathers were unemployed, 4(13.3%) of their fathers were private employees and 2(6.6%)of their father were government employees. 11(36.6%) had no occurrence of respiratory infection,12(40%) had between one and two times exposed to respiratory infection and 7(23.3%) had between three and four times exposed to respiratory infection.2(6.6%)had habits of balloon blowing and 28(93.3%) had no habits of balloon blowing.

The first objective of the study was to assess and compare the pretest and post test level of respiratory parameters among children with lower respiratory tract infection in study group and control group

The analysis of pre-test in the study group 21(70%) had mild respiratory distress, 9(30%) had moderate respiratory distress and none of them had no distress and severe distress.

During the post-test, in study group, 29(96.6%) had no respiratory distress, 1(3.3%) had mild respiratory distress and none of them had moderate distress and severe distress.

The mean score on the level of respiratory parameters among children. In study group the mean value was (29) in pre-test and (31.5) in post-test respectively. The estimated paired‘t’ value was (10.5*) which was significant at $p<0.05$.It shows balloon blowing exercise was effective in reducing respiratory distress.

In control group, during the pre test, 15(50%) had mild respiratory distress, 15(50%) had moderate respiratory distress and none of them had no distress and severe distress.

During the post-test, 3(10%) had no respiratory distress and 27(90%) had mild respiratory distress and none of them had moderate and severe distress.

In control group, the mean value on respiratory distress among children was (25.3) in pre-test and (26.9) in post-test respectively. The estimated paired‘t’ value of respiratory distress among children (1.47) which was non significant at $p<0.05$ level. Hence the hypothesis (H_1) was accepted.

The above result was supported by **Hepzibah Beulah, Motcha Rackini & Vijaya Samundeeswari., (2014)** who conducted a study to evaluate effectiveness of blow bottle exercise on respiratory status among children with lower respiratory tract infection in Chennai. A quantitative research design was used. The sample consisted of 30 study group and 30 control group with lower respiratory tract infection. Blow bottle exercise was given thrice a day for ten days for study group with routine care. The result showed that there was a significant difference in the heart rate, respiratory rate and oxygen saturation in the study group than the control group which was attributed to the use of respiratory exercise.

The researcher had utilized Nola.J.Pender’s health promotion model (2002-revised).In this study, the step of the theory is individual characteristics/experiences. In this first step, the researcher selected children with lower respiratory tract infection with the age group of 3-8 years and assessed respiratory parameters by using observational checklist. The second step is behaviour specific cognitions and affect. The researcher identified to promote lung function, reduce the occurrence of respiratory tract infection through practicing balloon blowing exercise and motivated to practice regularly to maintain lung function.

The second objective of the study was to evaluate the effectiveness of balloon blowing on respiratory parameters among children in study group.

The mean score of on the level of respiratory parameters among children in study group was (31.5) in post-test and in control group (26.9) in post-test respectively. The unpaired ‘t’ value was (7.65*) which was significant at

$p<0.05$.It shows balloon blowing exercise was effective in reducing respiratory distress. Hence the hypothesis (H_1) was accepted.

The above result was supported by **Kim, Jin-Seop, Lee & Yeon-Seop., (2012** who conducted a study to evaluate the effectiveness of balloon blowing exercise on lung capacity. The result showed that a pulmonary function of the balloon-blowing training group significantly improved as compared to those of the non-training group. The study revealed that the balloon-blowing exercise has positive effects on lung function.

Based on Nola.J.Pender's health promotion model, the third step is behavioural outcome. The researcher felt that the children with LRTI (3-8years) developed positive attitude about balloon blowing breathing exercise to improve lung function. Finally, the researcher identified that the study group had improved respiratory parameter than control group

The third objective of the study was to determine the association between the post test level of respiratory parameters among children with lower respiratory tract infection with demographic variables and clinical variables in study and control group

There was no significant association ($p<0.05$) between the post-test level of respiratory parameters among children with their selected demographic variables and clinical variables between the study group and control group. Hence the hypothesis (H_2) was not accepted.

The above result was supported by **Hepzibah Beulah.,(2014)** who conducted a study to assess the effectiveness of massage therapy on respiratory status among toddlers with lower respiratory tract infection in selected hospitals, Porur.A sample of 60 toddlers was conveniently assigned to study and control group. In study group routine care and massage therapy was performed for three days in the morning and in the evening post test was conducted at the end of each day whereas control group receives routine care. The result concluded that massage therapy was significantly effective in improving lung functions. The study revealed that there was an association found between respiratory status and mother's education, care taker of child among toddlers with lower

respiratory tract infection in study group. In the post- test of the study group, there was no association as found between respiratory status with selected demographic variables.

This chapter deals with the discussion of the study with reference to the objective and supportive studies. All the three objectives have been obtained and one hypothesis was retained in this study.

CHAPTER –VI

SUMMARY, CONCLUSION, NURSING IMPLICATION, LIMITATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study, conclusion, nursing implications, limitations and recommendations of the study.

SUMMARY

Quantitative evaluative approach with Quasi experimental non-equivalent control group pre-test, post-test research design was used to determine the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infection. The conceptual framework was based on modification made on Nola.J.Pender's health promotion model (2002-revised). The tool used in this study consists of three parts. Part one was Sociodemographic variables, part two was clinical variables and part three observational checklist. Convenience sampling technique was used to select the participants and data was collected from the study participants in study and control group. The data were collected and analyzed using descriptive and inferential statistics. The level of significance was assessed by $p < 0.05$ to test the hypotheses.

FINDINGS

The major findings of the study was summarized as follows,

- The demographic variable in study group 19(63.3%) of them belonged to the age between3 and 5 years, 15(50%) were males and 15(50%) were females. Regarding education19 (63.3%) were studying at the elementary level and 11(36.6%) were studying at the primary level.16 (53.3%) were the second child and 2(6.6%) were the third child. Regarding religion 15(50%) were to Hindus and 4(13.3%) were to Muslims .Regarding residence 16(53.3%) belonged to semi- urban. Regarding income 17(56.6%) had greater than Rs.10000.Regarding occupation 14(46.6%) of their fathers were private employees and 2(6.6%) of their fathers were government employees, 24(80%) of their mothers were unemployed and

6(20%) of their mothers were private employees.18 (60%) had between one and two times exposed to respiratory infection and 6(20%) had no occurrence of respiratory infection. Regarding previous habits of balloon blowing 27(90%) had no habits of balloon blowing and 3(10%) had previous habits of balloon blowing.

- In control group 17(56.6%) of them belonged to the age between3and 5 years, 20(66.6%) were females and 10(33.3%) were males. Regarding education13 (43.3%) were studying at the primary level and 17(36.66%) were studying at the elimentary level.16 (53.3%) were the second child and 2(6.6%) were the third child. Regarding religion 16(53.3%) were Christians and 3(10%) were Muslims. Regarding residence 19(63.3%) belonged to semi -urban 11(36.6%) belonged to rural.. Regarding income 22(73.3%) had between Rs.5000 and10000, 8(26.6%) had greater than Rs.10000 and 1(3.3%).Regarding occupation 20(66.6%) of their fathers were private employees and 10(33.3%) of their fathers were government employees, 24(80%) of their mothers were unemployed and 2(6.6%) of their mothers were government employees.11 (36.6%) had no occurrence of infection7(23.3%) had between three and four times exposed to respiratory infection . Regarding previous habits of balloon blowing 28(93.3%) had no habits of balloon blowing and 2(6.6%) had previous habits of balloon blowing.

- During pre-test in study group, 21(70%) had mild respiratory distress, 9(30%) had moderate respiratory distress and none of them had no distress and severe distress. In control group 15(50%) had mild respiratory distress, 15(50%) had moderate respiratory distress and none of them had no distress and severe distress.

- During post-test in study group, 29(96.6%) had no respiratory distress, 1(3.3%) had mild respiratory distress and none of them had moderate distress and severe distress. In control group, 3(10%) had no respiratory distress and 27(90%) had mild respiratory distress and none of them had moderate and severe distress

- The mean score on the level of respiratory parameters among children :In study group was (29) in pre-test and (31.5) in post-test respectively. The paired t value was (10.5*) which is significant at p<0.005.Hence there was significant difference between pre-test and post-test level of respiratory parameters among children with lower respiratory tract infection. Hence research hypothesis H_1 was accepted.

- The mean score on level of respiratory parameters in study group was 31.5 in post-test and 26.9 in control group post-test. The estimated unpaired 't'value was 7.65* which is significant at p <0.05.It shows that balloon blowing exercise was effective in improving the level of respiratory parameters. Hence research hypothesis H_1 was accepted.

- There was no significant association (p<0.05) between the level of respiratory parameters among children with their selected demographic variables and selected clinical variables between the study group and control group. Hence, hypothesis H_2 was not accepted.

CONCLUSION

The study was done to evaluate the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infection in selected hospitals, Kanyakumari district. The mean score on level of respiratory parameters among children with lower respiratory tract infection in study group was 29 in pre-test and 31.5 in post-test. The paired't' value was 10.5* which is significant at $p < 0.05$. From the result of the study, it was concluded that balloon blowing exercise was effective on respiratory parameters among children with lower respiratory tract infection. Children develop five to eight attacks of respiratory illness such as bronchitis, pneumonia and asthma which cause 30-40% of hospitalization up to 3-8 years. So that the researcher identified balloon blowing exercise helps to reduce the length of hospital stay among children. Balloon blowing exercise was not only cost effective, but also children enjoyable to as a recreational game and children were easily attracted towards it. Caregivers motivate to practice the balloon blowing to their children and encourage other caregivers in order to create health awareness. Therefore the

researcher felt that more importance should be given for deep breathing exercise among children like balloon blowing to enhance lung expansion and reduce the reoccurrence of lower respiratory tract infection.

NURSING IMPLICATIONS

The researcher has derived the following implications from the study results, which are of vital concern to the field of nursing service, nursing administration, nursing education and nursing research.

IMPLICATIONS FOR NURSING PRACTICE

Self instructional module regarding breathing exercises given by the health personnel will help the children to improve their knowledge on exercises. Nursing service department can arrange health education programmes in the outpatient department for teaching the children on breathing exercises. Nurses , a changing agents can introduce various breathing measures to reduce respiratory signs and improve lung function among children with lower respiratory tract infections.

IMPLICATIONS FOR NURSING EDUCATION

Nursing students must be encouraged to utilize their knowledge on promotive measures by health education and demonstration in hospital and community. To conduct workshops or conferences for students regarding the breathing exercises to strengthen the curriculum for nurses to excel them in knowledge and skill in areas of various positive thinking exercises and therapeutic play activities. Preparation of procedure manual as well as a voice recorded audiotape to the parents which is to be practiced in home can be made.

IMPLICATIONS FOR NURSING ADMINISTRATION:

Administrators should take initiative action to update the knowledge of nursing personnel regarding breathing exercises in improvement of lung function and reducing the signs of respiratory illness by in-service education. Nurse administrators can conduct workshop and seminars on breathing exercises for lower respiratory tract infections to all level of nursing personnel in the hospital. They can organize awareness camp regarding breathing exercises for children on special days.

IMPLICATIONS FOR NURSING RESEARCH

Evidence based practice helps the nurses to enrich them in knowledge and practice. Nursing researcher should be aware of the needs and problems of the existing health care system. More research studies can be conducted similar to this study to determine the effectiveness of balloon blowing exercise in reducing lower respiratory tract infection.

LIMITATIONS

Since it is an exercise programme to the children, the researcher found difficulty in making them to understand and to co-operate to do the exercises.

RECOMMENDATIONS

The following studies can be undertaken to strengthen balloon blowing exercise as a good remedy for improving the level of respiratory parameters

- This study can conducted with larger number of samples.
- A study can be conducted among children undergoing cardiac and abdominal surgeries.
- A study can be conducted with more than one month of intervention.
- This study can also be conducted as a comparative study using intensive spirometry, deep breathing exercises like bottle blowing, blowing cotton ball, blowing bubbles, blowing ping-pong ball, blowing candle etc.

REFERENCE

TEXT BOOKS

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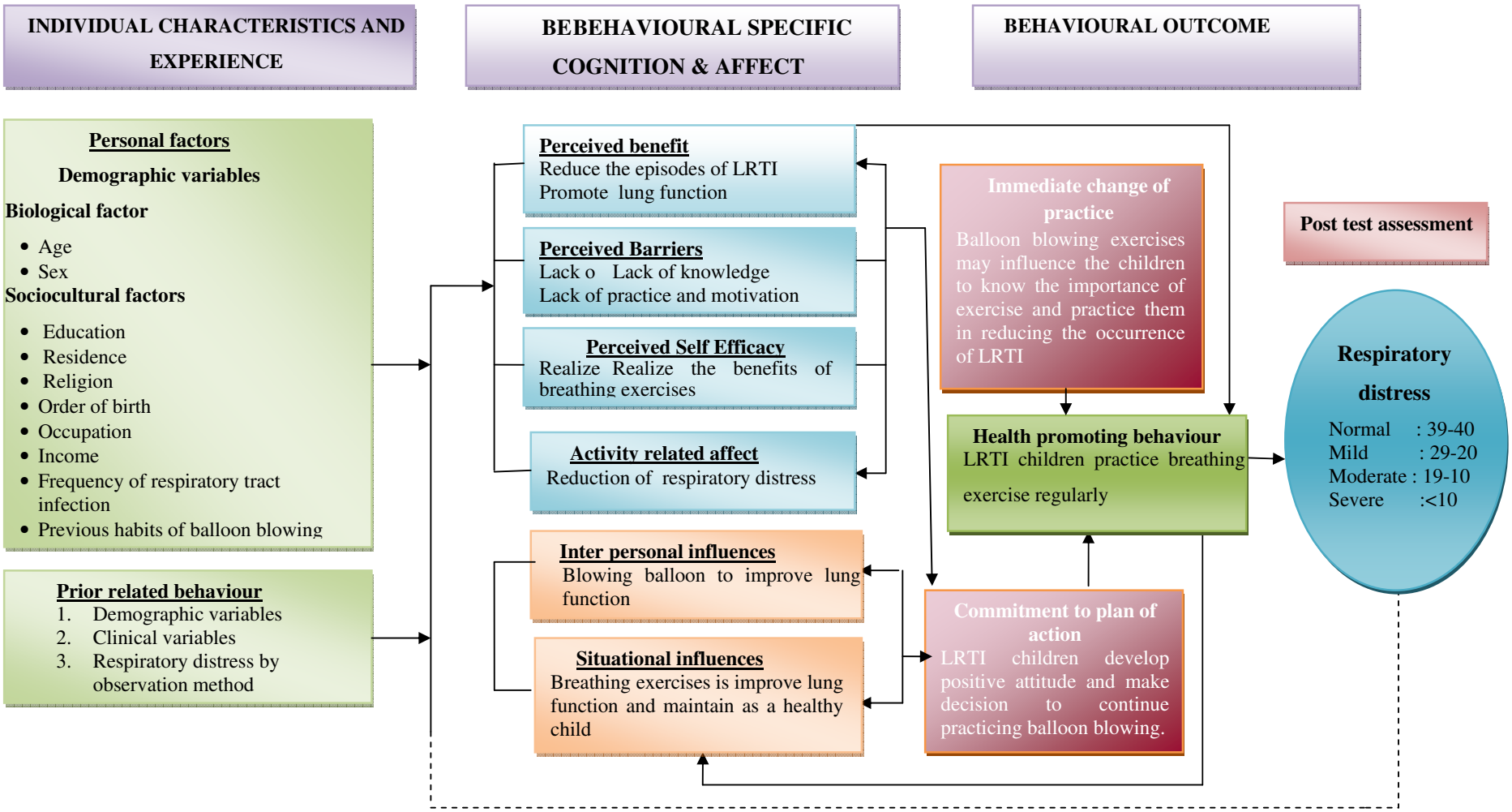

FIG: 1.1 CONCEPTUAL FRAMEWORK BASED ON MODIFIED PENDER'S HEALTH PROMOTION MODEL (REVISED 2002)

ANNEXURE –I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

St. XAVIER'S CATHOLIC COLLEGE OF NURSING
Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.
Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

13.06.2014

To

The Medical Superintendent,

Dr.Jayaharan Memorial Hospital,

Nagercoil.

Respected Sir,

Ms..Sreedevi R.K, is a Student of M.Sc.,Nursing Programme from the clinical speciality, child health nursing in our college, she is conducting a study on **"A quasi experimental study to evaluate the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infection in selected hospitals, Kanyakumari district".**

This is for the research project to be submitted to the Tamilnadu Dr.M.G.R Medical University in partial fulfillment of university requirement for the award of M.Sc.,Nursing Degree.

As a part of her study she needs to evaluate the effectiveness of balloon blowing among children with lower respiratory tract infection. So permission may kindly be granted for her to conduct the study at Dr.Jayaharan Memorial Hospital. She will abide by the rules and regulation of the school.

Thanking you

Yours faithfully,

PRINCIPAL
ST.XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

ANNEXURE-II

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY

DR. JAYAHARAN MEMORIAL HOSPITAL
33, VICTORIA PRESS ROAD, NAGERCOIL - 629 001.
(Ward) 04652-222664
(Hos) 04652-233337
Fax : 04652-223869
email : jmh_ngl@yahoo.in

Dr. SUNIL J. JAYAHARAN, M.S., (Gen. Surg) F.S.A.S.M.S., F.M.A.S.(R.No.38109)
Dr. SASHYA JAYAHARAN, M.D., D.C.H.,PGDAP (R.No.37127)
Dr. IRINE FELCITA, D.C.H., (R. No. 74448)
Dr. PARVEEN BANU, D.C.H., (R.No.70991)
Dr. RAMESH, M.D., D.M. (Neonatology) (R. No. 66382)
Dr. JOHN VINOJ, D.C.H., M.D., (Gen.Medicine) (R.No.67500)
Dr. ANANTHI, D.A.,M.D.,(Gen.Medicine)(R.No. 58709)
Dr. SONIA JEROLIN, D.L.O., (ENT) (R. No. 62790)
Dr. MEENA, D.M.R.D., (R.No. 39945)
Dr.AROCKIYA ARUL PRAKASH, M.D.,D.A. (Anaesthetist) (R. No. 48240)
Dr. SHANTHI, D.G.O., (R. No. 44859)
Dr. UMA MAHESHWARI, D.G.O.,D.N.B. (O.G.) (R. No.60082)
Dr. S. KRISHNAKUMAR, M.S. (Ortho) (R.No. 35039)
Dr. JONEY MANDICE, M.S. (Ortho) (R.No. 64113)
Dr.N. JAYASEELAN, M.D., D.M. (Cardio) (R.No. 35753)
Dr. ARUL PRAKASH, M.D., D.P.M., (R.No. 44153)
Dr. C. GAUTHAMAN, M.S.,F.R.C.S.(Eng) Dip.UROL (Lon)(R.No. 36928)
Dr. SIVA RAJAN, M.S., M.Ch. (Paed. Surg.) (R.No. 28516)
Dr. EDWIN EMPEROR, M.S.M.Ch. (Plastic Surgery)(R.No.46250)
Dr. K. KRISHNAN KUTTY, M.D.D.M. (Rheumatology) (R. No. 39390)
Dr. PRABHAHARAN, M.S., DNB., MRCS., (Edin) M.Ch.(SGE)(R.No.58712)
Dr. SUNIL RICHARDSON, M.D.S.,(Facio-Maxillary Surgeon)(R.No.5762.A.)
Dr. SETHURAM, M.D., D.M. (Neurology) (R.No.49195)
Dr. MUTHURETNAM, M.S. M.Ch. (Neuro Surgery) (R.No. 55201)
Dr. A.J.S. PRAVIN, M.D., D.D., D.N.B. (R.No. 41553)
Dr. S. EGWIN ANAND, M.D., D.V.L., (R.No.58586)
Dr. GANGADEVI, M.D. (Radn.onco) D.T.M. & H.(Eng.)
Dr. SARAVANA KUMAR, M.B.B.S. (R.No. 99438)
Dr. SUCITHRA. R. M.B.B.S. (R.No. 101325)
Dr. JAIKISHORE K. M.B.B.S. (R.No. 103718)
Dr. THOMAS J.P. SUNNY, M.B.B.S. (R.No.42167)
Dr. BINITTA SHERIN, M.B.B.S. (R.No.101468)
Dr. BLESSIE SURESH, M.B.B.S. (R.No.91204)
Dr. RATHISHA, M.B.B.S. (R.No.105593)

CERTIFICATE

This is to certify that R.K. Sreedevi M.Sc (N) II year student from St. Xavier's Catholic College of Nursing, Chunkankadai, Nagercoil, Kanyakumari District, conducted a study to evaluate the effectiveness of Balloon Blowing on Respiratory arameters among children with lower respiratory tract infections, in Dr. Jayaharan Memorial Hospital, Nagercoil in the month of August.

Date: 26/12/2014

Dr. Sashya Jayaharan
Dr. Sashya Jayaharan, M.D.,D.C.H.,
Dr. JAYAHARAN MEMORIAL HOSPITAL,
33, Victoria Press Road, NAGERCOIL - 629 001.
(Reg.No. 37127)

ANNEXURE – III

LETTER REQUESTING OPINION AND SUGGESTION OF EXPERTS FOR CONTENT VALIDITY OF THE RESEARCH TOOL

From

Ms. R.K.Sreedevi,

M.Sc. Nursing II year,

St. Xavier's Catholic College of Nursing,

Chunkankadai.

To

Dr. Sashya Jeyaharan, MBBS, MD, DCH

Paediatrician,

Dr.Jeyaharan Memorial Hospital, Nagercoil

Respected Madam,

Sub: Requisition for expert's opinion and suggestion for the content validity.

I, Ms. R.K.Sreedevi, M.Sc. Nursing II year student of St.Xavier's Catholic College Of Nursing, Chunkankadai, have selected the following topic, "A quasi experimental study to evaluate the effectiveness of balloon blowing on lower respiratory tract infection among children in selected hospitals, Kanyakumari District" for my dissertation to be submitted to TamilNadu Dr. M.G.R. Medical University in the partial fulfillment of the requirement for award of Master of Science in Nursing.

I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool. Kindly suggest modifications, addition and deletions, if any, in the remarks column.

Thanking You,

Place: Chunkankadai. Yours sincerely,

Date: Ms.R.K.SREEDEVI

ENCLOSURE:

1.Problem statement, objectives, and hypothesis of the study.
2.Demographic profile.
3.Observational checklist.
4.Evaluation Proforma.

ANNEXURE –IV

CRITERIA CHECK LIST FOR VALIDATION OF THE RESEARCH TOOL

INSTRUCTION:

Kindly give your suggestions regarding the accuracy, relevance and appropriateness of the content. Kindly (✓) against specific columns.

Validation Of Demographic variables.

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Validation of observational checklist

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

ANNEXURE – V

EVALUATION CRITERIA CHECKLIST FOR VALIDATION OF THE TOOL

INSTRUCTIONS:

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly please tick mark (✓) in the appropriate columns and give remarks.

Interpretation column:

Column I – meets the criteria.

Column II - Partially meets the criteria.

Column III – does not meet the criteria.

S. NO	CRITERIA	1	2	3	REMARKS
1.	Scoring -adequacy. -clarity. -simplicity.				
2.	Content -logical sequence. -adequacy. -relevance.				
3.	Language -Appropriate. -clarity. -simplicity.				
4.	Practicability -easy to score. -precise. -utility.				

Signature: Any other suggestion:

Name:

Designation:

Address:

ANNEXURE – VI

LIST OF EXPERTS VALIDATED THE TOOL

1. Dr.Sashya Jeyeharan, MD, DCH, PGDAP,
   Dr.Jeyaharan Memorial Hospital,
   Nagercoil.

2. Dr.Sudha Ponnu, MBBS, MD,
   Gerdi Gutperle Agasthiyar Muni Child Care Centre,
   Vellamadam.

3. Dr.Violin Sheeba, M.Sc (N),
   Principal,
   Thasiah College of Nursing,
   Marthandam.

4. Mrs.Malchijah, M.Sc (N),
   Associate Professor,
   Christian College of Nursing,
   Neyyoor.

5. Mrs.D.Prema Latha, M.Sc (N),
   Associate Professor,
   Christian College of Nursing,
   Neyyoor.

ANNEXURE –VII

INFORMED CONSENT

I _____ from_____. Since I have mild / moderate/severe respiratory parameters, I am willing to participate in the study to evaluate the effectiveness of balloon blowing, without any compulsion. I came to know through the researcher that the balloon blowing exercise is harmless and easy to follow.

Yours sincerely,

ANNEXURE-VIII

CERTIFICATE OF ENGLISH EDITING

TO WHOM SO EVER IT MAY CONCERN

Certified that the dissertation paper titled "A quasi experimental study to evaluate the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infections in selected hospitals, kanyakumari district.", by Ms. Sree Devi has been checked for accuracy and correctness of English language usage and that the language used in the tool is lucid, unambiguous, free of grammatical and spelling errors and apt for the purpose.

D. Suresh Kumar, M.A., M.Phil.,
Assistant Professor of English,
Lekshmipuram College of Arts and Science,
Neyyoor - 629 802.

SIGNATURE

ANNEXURE-IX

CERTIFICATE OF STATISTICAL ANALYSIS AND INTERPRETATION OF DATA

TO WHOM SO EVER IT MAY CONCERN

Certified that the dissertation paper titled **A quasi experimental study to evaluate the effectiveness of balloon blowing on respiratory parameters among children with lower respiratory tract infection in selected hospitals, Kanyakumari district** done by Ms Sreedevi, R.K. has been checked for the accuracy in statistical analysis and interpretation and was appropriate for the purpose

Signature

Dr. G. IMMANUEL
Assistant Professor
Centre for Marine Science & Technology
Manonmaniam Sundaranar University
Rajakkamangalam - 629 502
K. K. District, Tamilnadu, India

ANNEXURE – X

TOOL FOR DATA COLLECTION IN ENGLISH

SECTION A

Sample Number

Instructions

The researcher will ask the items listed below and place the tick mark ( ) against the response given by the respondents:-

A) Socio-Demographic Variables

1. Age of the child
   a) 3-6 years ( )
   b) 6-8 years ( )
2. gender of the child
   a) Male ( )
   b) Female ( )
3. Educational status
   a) Elementary ( )
   b) Primary ( )
4. Type of family
   a) Nuclear ( )
   b) Joint ( )
   c) Extended ( )
   d) Separated ( )
5. order of birth
   a) first child ( )
   b) second child ( )
   c) third child ( )
6. Religion
   a) Hindu ( )
   b) Christian ( )
   c) Others ( )

7. Residence

   a) Rural ( )

   b) Semi urban ( )

8. Income

   a) Below Rs. 5000 ( )

   b) Rs.5001- Rs.10000 ( )

   c) Above Rs.10001 ( )

9. Occupation of father

   a) Unemployed ( )

   b) Coolie ( )

   c) Private employee ( )

   d) Government employee ( )

10. Occupation of mother

   a) Unemployed ( )

   b) Coolie ( )

   c) Private employee ( )

   d) Government employee ( )

11. Frequency of respiratory infection in last year

   a) No infection ( )

   b) 1-2 times ( )

   c) 3-4 times ( )

   d) Above 4 times ( )

12. Previous habits of balloon blowing

   a) Yes ( )

   b) No ( )

   If yes how often? _____

ANNEXURE –XI

SECTION-B

DATA RELATED OBSERVATIONAL CHECKLIST

Criteria	scoring			
	4	3	2	1
Respiratory rate (breaths/minute) 3-6 Years 6-8Years	 25-28 21-24	 22-25 18-21	 20-22 16-18	 <20 <16
Heart rate (beats/minute) 3-6Years 6-8Years	 95-110 80-105	 90-95 80-95	 85-90 75-80	 <85 <75
Temperature	98.4°*f*-98.6°*f*	99°*f*	100°*f*	>100°*f*
Oxygen saturation	100%	90%	80%	<80%
Chest retractions	Visible	Slight	very slight	Absent
Breath sounds	Normal	Mild adventitious sounds	Moderate adventitious sounds	Severe Adventitious sounds
Use of accessory muscles	Abdominal, Shoulder and Rib muscles Involved	Shoulder , rib muscles and mild abdominal muscles	Rib muscles and shoulder muscles	Rib muscles only involved
Cough	Absent	Present with sputum	Present with moderate sputum	Present with severe sputum
Nasal flaring	Absent	Moderate exertion	Mild exertion	At rest
Dyspnea	Absent	Moderate Exertion	Mild exertion	At rest

ANNEXURE-XII

BALLOON BLOWING EXERCISE

Aim

- To improve lung expansion.
- To reduce the occurrence of respiratory tract infection.

Goal

- To know the importance of balloon blowing exercise.
- To motivate blowing balloon regularly.
- To create awareness among others.

Duration

- 30 minutes.

Participants

- Children who have lower respiratory tract infection in Dr.Jeyaharan Memorial Hospital **.**

Steps:

Step I: obtaining a balloon .

- Balloon selected for the children in an attractive colour.

Step II: Loosening the balloon by stretching it in all directions.

- It helps the children to blow the balloon easily and allow for equal air entry.

Step III: Grasping the end of the balloon.

- The researcher asked the children to hold the open end of the balloon.

Step IV: Taking a deep breath and seal lips around the opening of the balloon.

- The researcher asked the child to inhale deeply from the lungs and place the lips tightly around the end of the balloon.

Step V: Blowing air from lungs into the balloon.

- The researcher asked the child to exhale slowly inside the balloon.

Step VI: Watching as the balloon initially that resists and then gradually expands. Inflating the balloon about 7 inches.

- The researcher asked the children to do inhale and exhale repeatedly, watching the balloon initially resisting and gradually increasing.

Step VII: Sealing the balloon with thumb and index finger.

- ❖ The researcher asked the children to hold the balloon tightly with thumb and index finger.

Step VIII: Releasing air from the balloon and repeating the steps.

- ❖ The researcher asked the children to practice again and again.

ANNEXURE-XIII

FORMULAS USED FOR DATA ANALYSIS

DESCRIPTIVE STATISTICS

Mean

$$\overline{X} = \frac{\sum X}{N}$$

Standard deviation

$$S.D = \frac{\sqrt{\Sigma(x-\bar{x})^2}}{n}$$

INFERENTIAL STATISTICS

Independent 't' test

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Dependent 't' test

$$t = \frac{\bar{d}\sqrt{n}}{S}$$

$$S = \frac{\sqrt{\Sigma(d-\bar{d})^2}}{n-1}$$

Chi-Square test

$$\chi^2 = \Sigma \frac{(o-e)^2}{e}$$

ANNEXURE-XIV

PHOTOGRAGHS OF BALLOON BLOWING